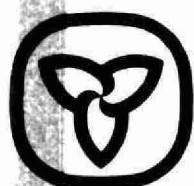


ANNUAL WIND ROSES FOR ONTARIO

REPORT WR-78-1



Ontario

Ministry
of the
Environment

The Honourable
Harry C. Parrott, D.D.S.,
Minister

K.H. Sharpe,
Deputy Minister

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Annual Wind Roses
for
Ontario

Report WR-78-1

Air Quality and Meteorology Section
Air Resources Branch
Ontario Ministry of the Environment
November 1978

MCF
ANA
WAD
APVP

apvp

Report WR-78-1

Project Manager

Joel Kurtz

Data Processing

Fred Nobles

Programming

Patrick Chau

In this report we present annual wind roses for Ontario wind stations based on data collected by the Atmospheric Environment Service of Environment Canada and the Air Resources Branch of Environment Ontario. These are soon to be supplemented by statistics from wind stations operated by Ontario Hydro.

Reports are also being prepared on seasonal wind roses, and on "unbiased" wind roses where the effects of observer bias (as in the Armstrong wind rose, p.2, for example) will be minimized. We anticipate issuing updates on a biannual basis. Comments and suggestions would be welcomed.

Publications used in compiling these wind roses include:

1. Air Resources Branch, Wind Data Files, 1970-1977.
2. Atmospheric Environment Service, Canadian Normals, Volume 3, Wind, 1955-1972.
3. Meteorological Branch, Dept. of Transport, Climatic Summaries for Selected Meteorological Stations in Canada, Volume 11 (revised), 1959.
4. Meteorological Branch, Dept. of Transport, Climatic Summaries for Selected Meteorological Stations, Volume 11, 1948.

How to use this report

1. To locate the wind rose for a given location find that location in the List of Stations (Table 1), then refer to the appropriate page number.
2. To determine a wind rose for an area of interest, find the nearest wind stations from the Map of Wind Stations (Figure 1), then refer to the given page numbers.

Table 1

LIST OF WIND STATIONS

Page	
1.	Allanburg
2.	Armstrong
3.	Atikokan
4.	Camp Borden
5.	Caribou Island
6.	Cartier
7.	Centralia
8.	Chalk River
9.	Chapleau
10.	Cobourg
11.	Cochrane
12.	Cornwall (ARB)
13.	Cornwall (Ontario Hydro)
14.	Courtright (Level 1)
15.	Courtright (Level 2)
16.	Courtright (Level 3)
17.	Cove Island
18.	Delhi
19.	Douglas Point
20.	Earlton
21.	Etobicoke (Level 1)
22.	Etobicoke (Level 2)
23.	Etobicoke (Level 3)
24.	Fergus Shand Dam
25.	Geraldton
26.	Gore Bay
27.	Graham
28.	Great Duck Island
29.	Guelph
30.	Haileybury
31.	Hamilton (Marine Police)
32.	Hamilton (RBG)
33.	Hamilton (ARB) (Level 1)
34.	Hamilton (ARB) (Level 2)

Page

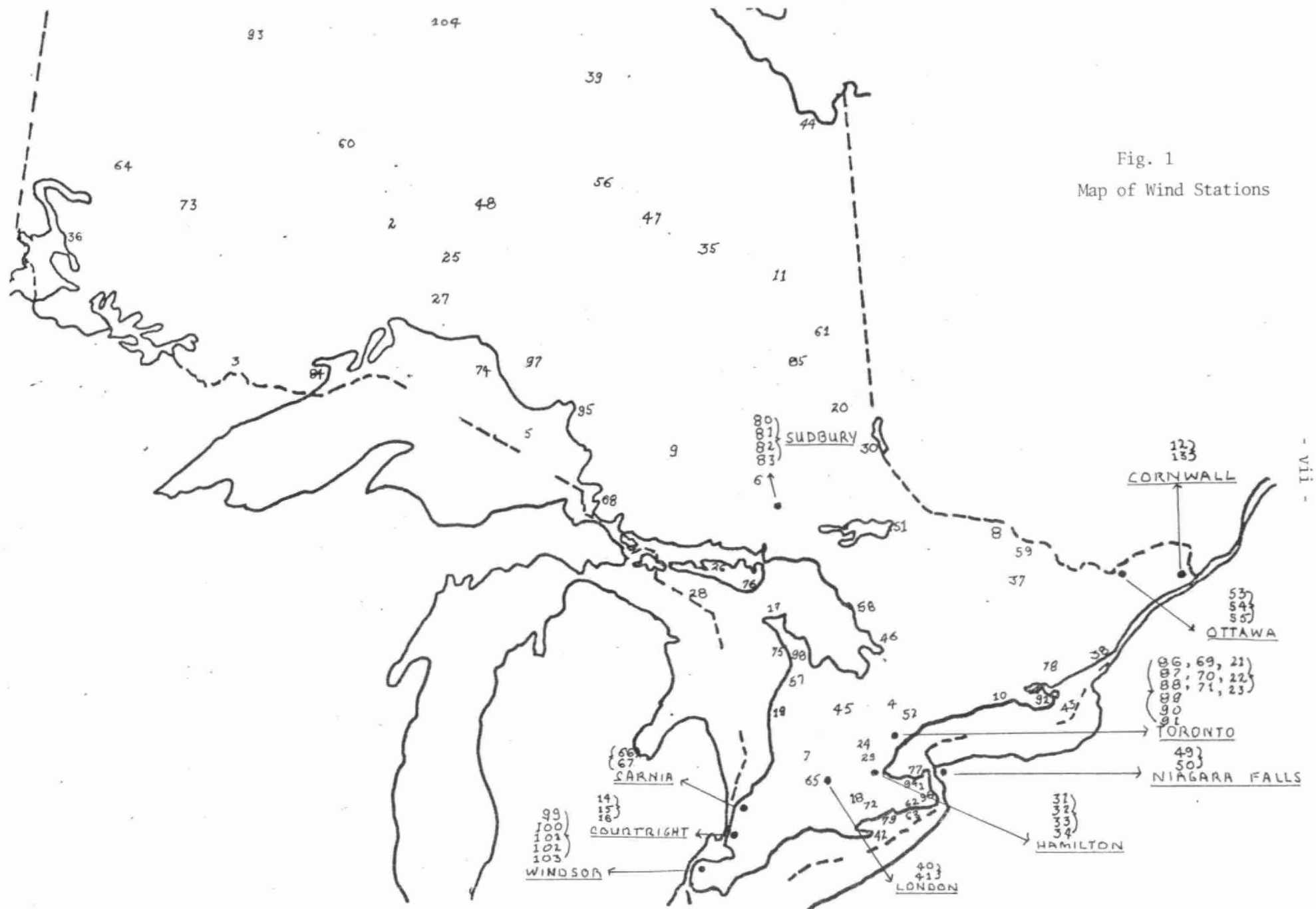
35.	Kapuskasing
36.	Kenora
37.	Killaloe
38.	Kingston
39.	Landsdowne House
40.	London (Crumlin)
41.	London (Lambeth)
42.	Long Point
43.	Main Duck Island
44.	Moosonee
45.	Mount Forest
46.	Muskoka
47.	Nagagami
48.	Nakina
49.	Niagara Falls (ARB)
50.	Niagara Falls (Grass Island)
51.	North Bay
52.	Oak Ridges
53.	Ottawa (Int'l A)
54.	Ottawa (NRC)
55.	Ottawa (Rockcliffe)
56.	Pagwa
57.	Paisley
58.	Parry Sound
59.	Petawawa
60.	Pickle Lake
61.	Porquis Junction
62.	Port Colborne Light
63.	Pt. Maitland
64.	Red Lake
65.	St. Thomas
66.	Sarnia

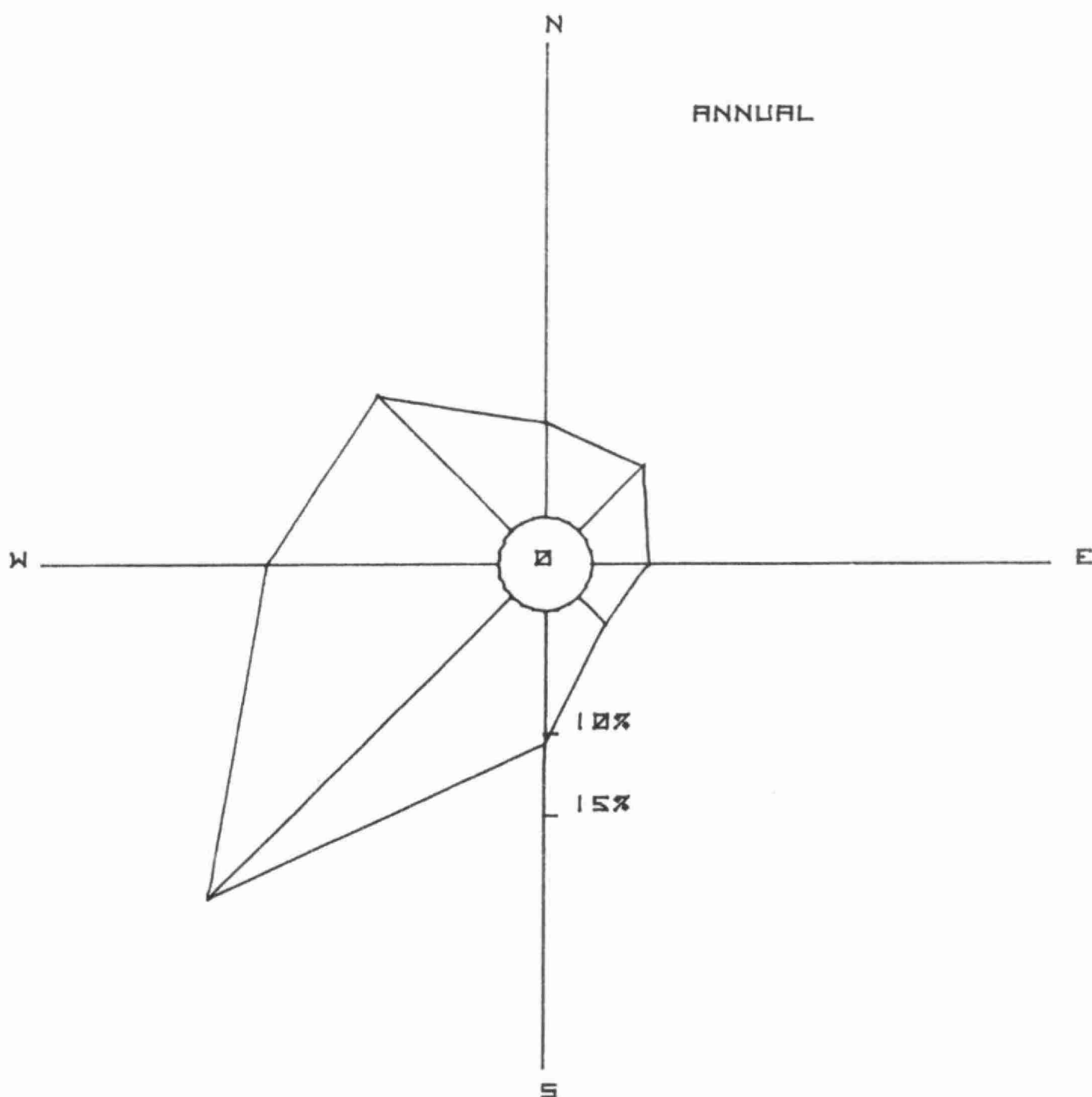
Page

67. Sarnia (Polysar)
68. Sault Ste. Marie
69. Scarborough (ARB) (Level 1)
70. Scarborough (ARB) (Level 2)
71. Scarborough (ARB) (Oliver Mowatt P.S.)
72. Simcoe
73. Sioux Lookout
74. Slate Island
75. Southampton
76. South Baymouth
77. St. Catharines
78. Sterling
79. Stormness
80. Sudbury (A)
81. Sudbury Ash St.
82. Sudbury (ARB) (Level 1)
83. Sudbury (ARB) (Level 3)
84. Thunder Bay
85. Timmins
86. Toronto (ARB) (Bruce P.S.)
87. Toronto (Downsview)
88. Toronto (Int'l A)
89. Toronto (Agincourt)
90. Toronto Island (A) (ARB)
91. Toronto Island (A) (AES)
92. Trenton
93. Trout Lake
94. Vineland
95. Wawa
96. Welland
97. White River
98. Wiarton
99. Windsor (A)

Page

- 100. Windsor (ARB) (Level 1)
- 101. Windsor (ARB) (Level 2)
- 102. Windsor (ARB) (Level 1) (Riverside Drive)
- 103. Windsor (ARB) (Level 2) (Riverside Drive)
- 104. Winisk





STATION INFORMATION

LOCATED

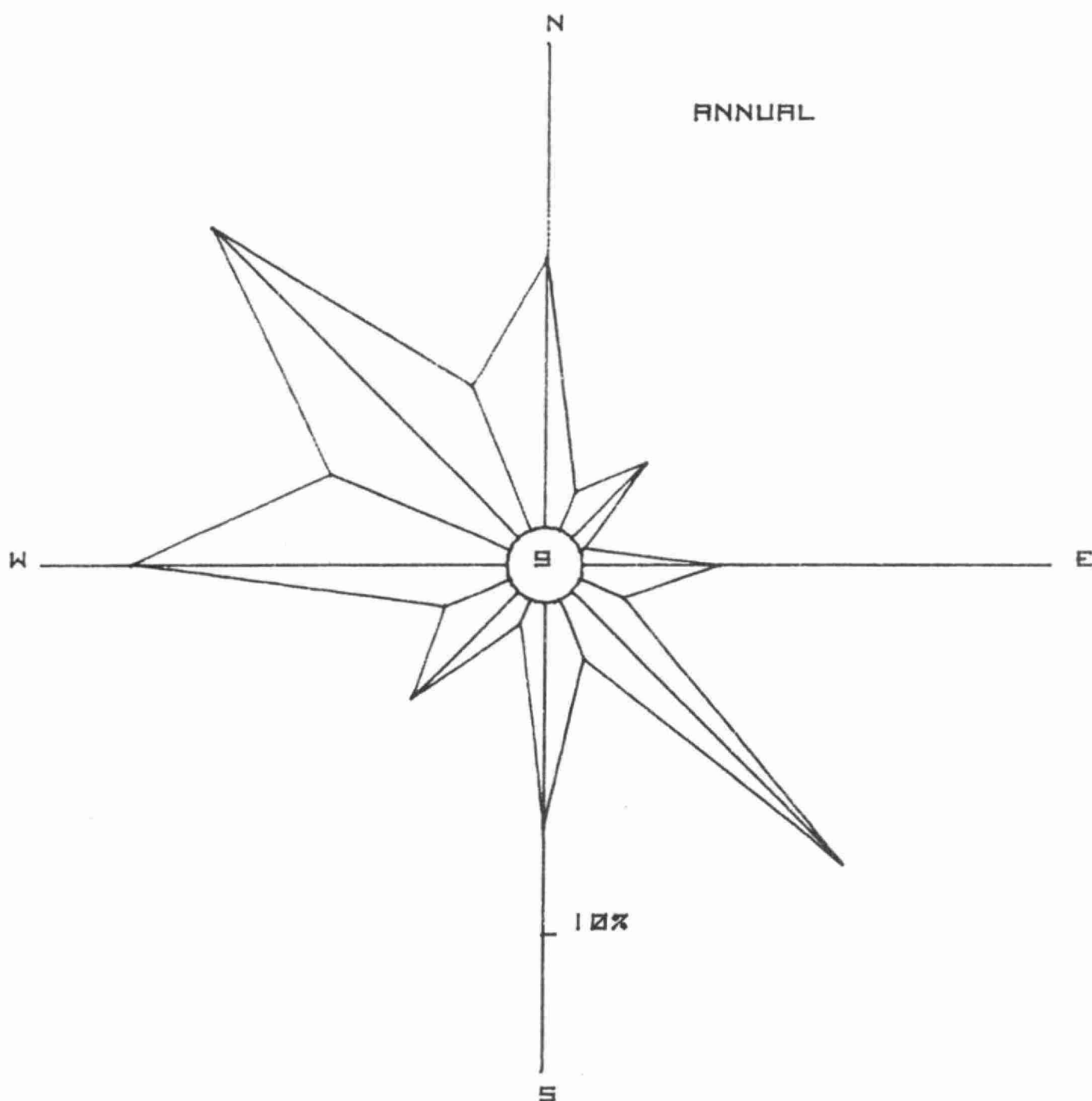
AT TRANSFORMER STN OFF

HWY 58, S OF ALLANBURG

HEIGHT 36.9M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	8	8	5	11	28	17	14	8



STATION INFORMATION

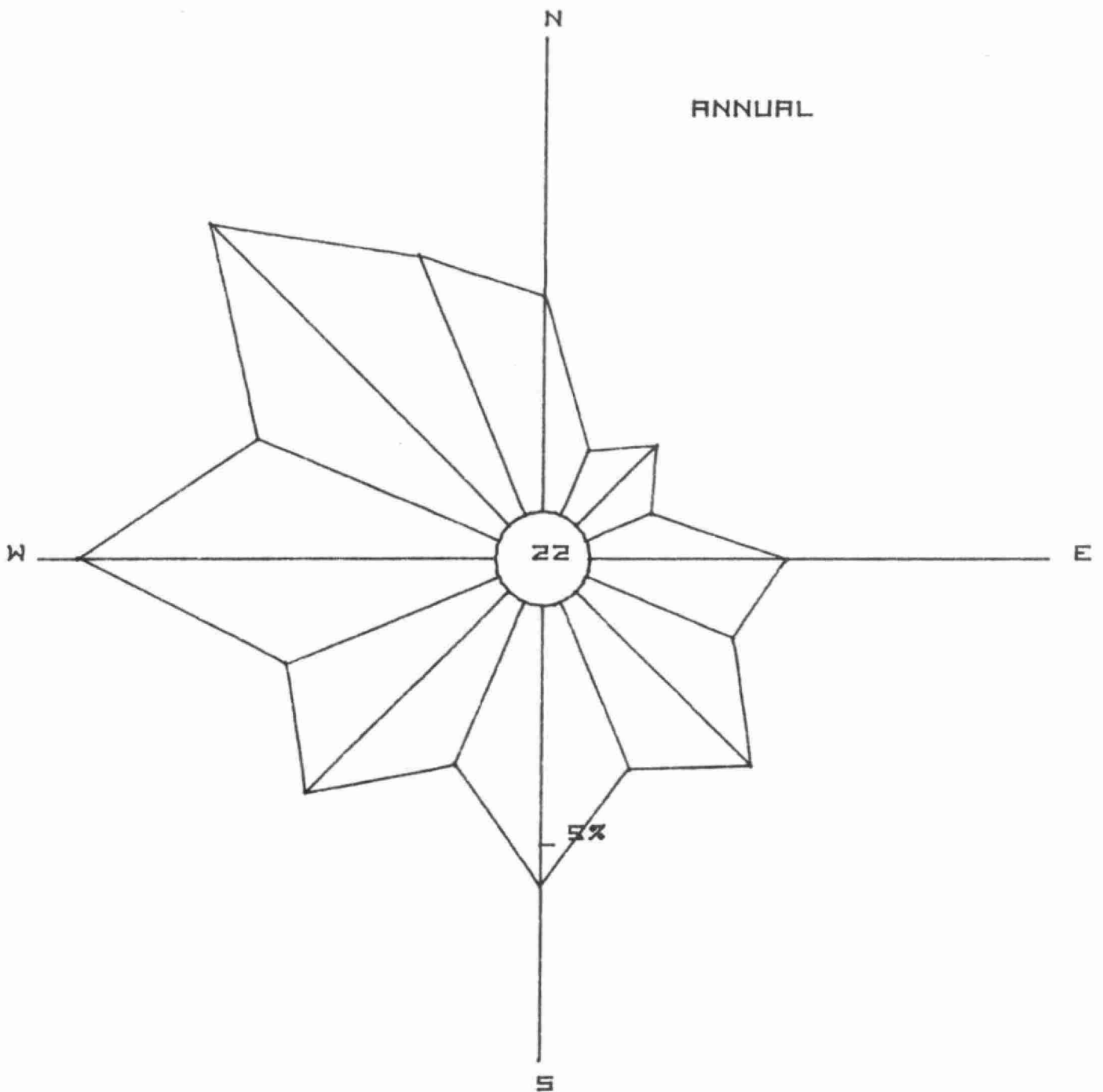
LOCATED 11.6KM E OF TOWN AT AIRPORT
 AREA WOODED WITH MANY LAKES AND
 HILLS 1.6-3.2 KM W THRU SSE
 HEIGHT 25.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
0	2	4	1	5	2	12	3	7	2	5	3	11	8	13	5	5

ATIKOKAN (AES) 1966-1976

3

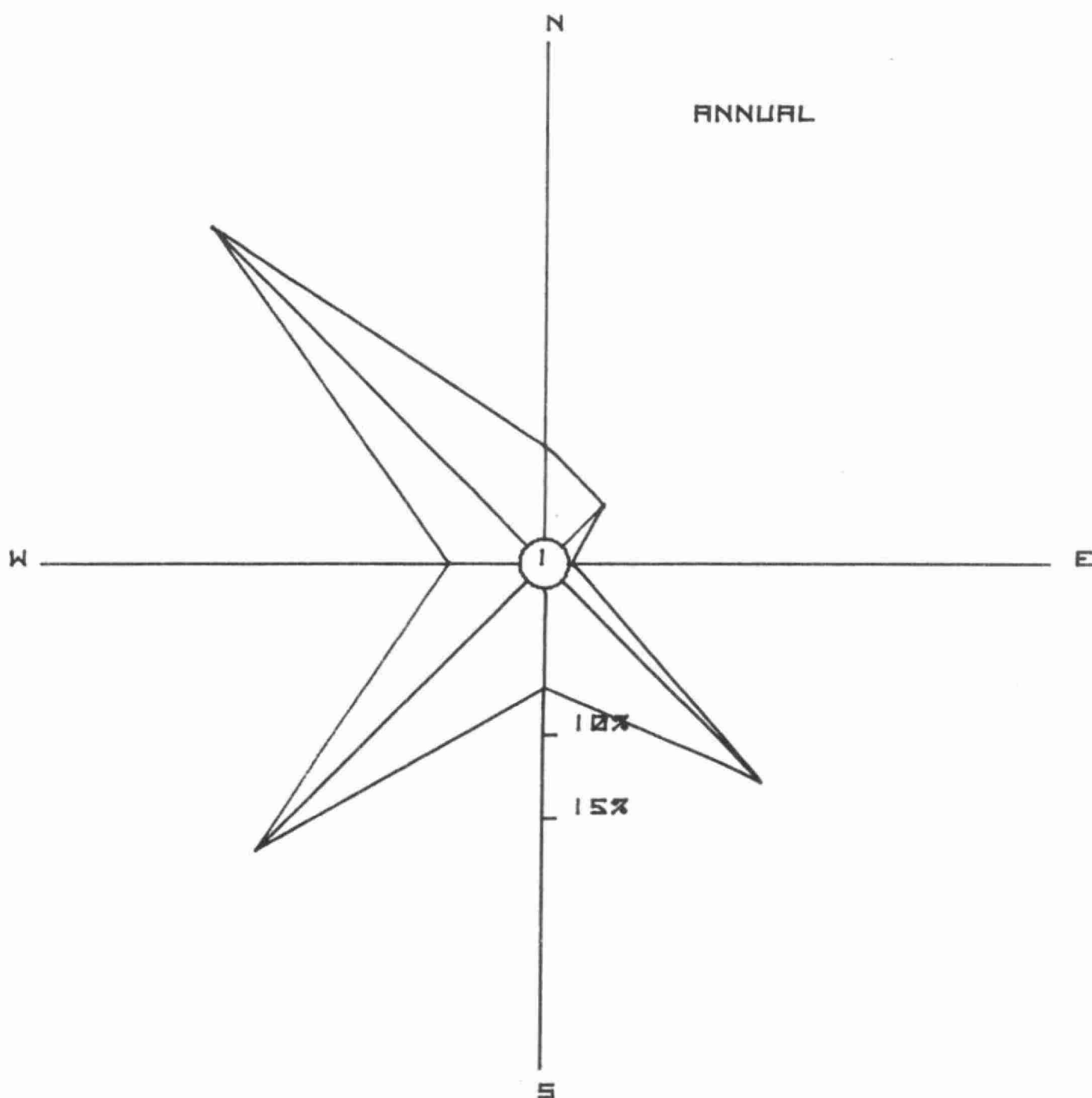


STATION INFORMATION

LOCATED E SIDE TOWN NE INTERSECTION HWYS
622 AND 118, HILLY ROCKY MINING TERRAIN
WITH HEAVY BUSH AND MANY LAKES
HEIGHT 13.2 M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
5	2	3	2	4	4	5	4	8	4	8	5	8	5	8	8	22



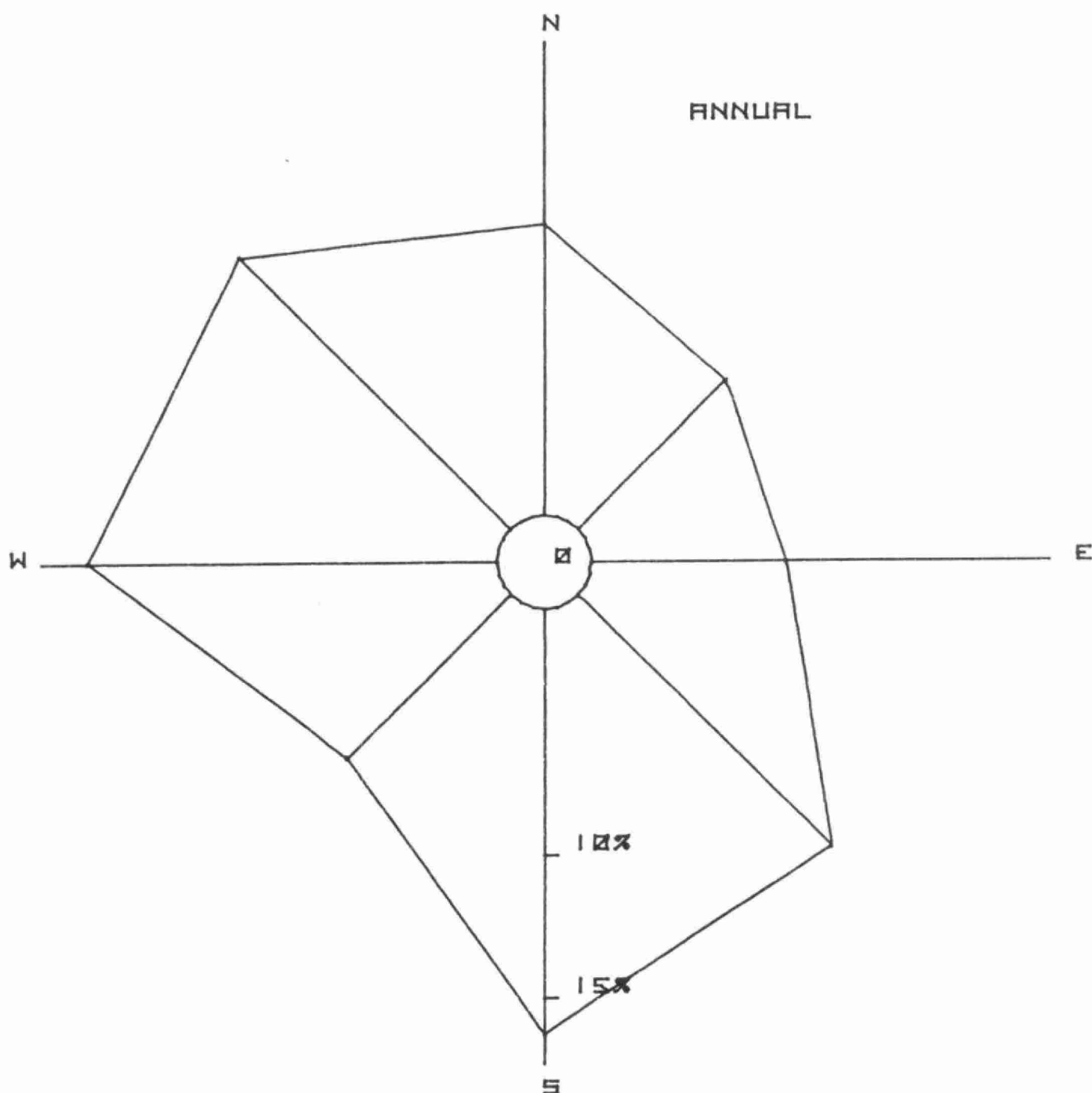
STATION INFORMATION

LOCATED

S SECTION MILITARY CAMP, AREA IS FLAT AND
WOODDED IN ALL DIRECTIONS
HEIGHT 18.4M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
7	2	1	1	15	10	1	2	1

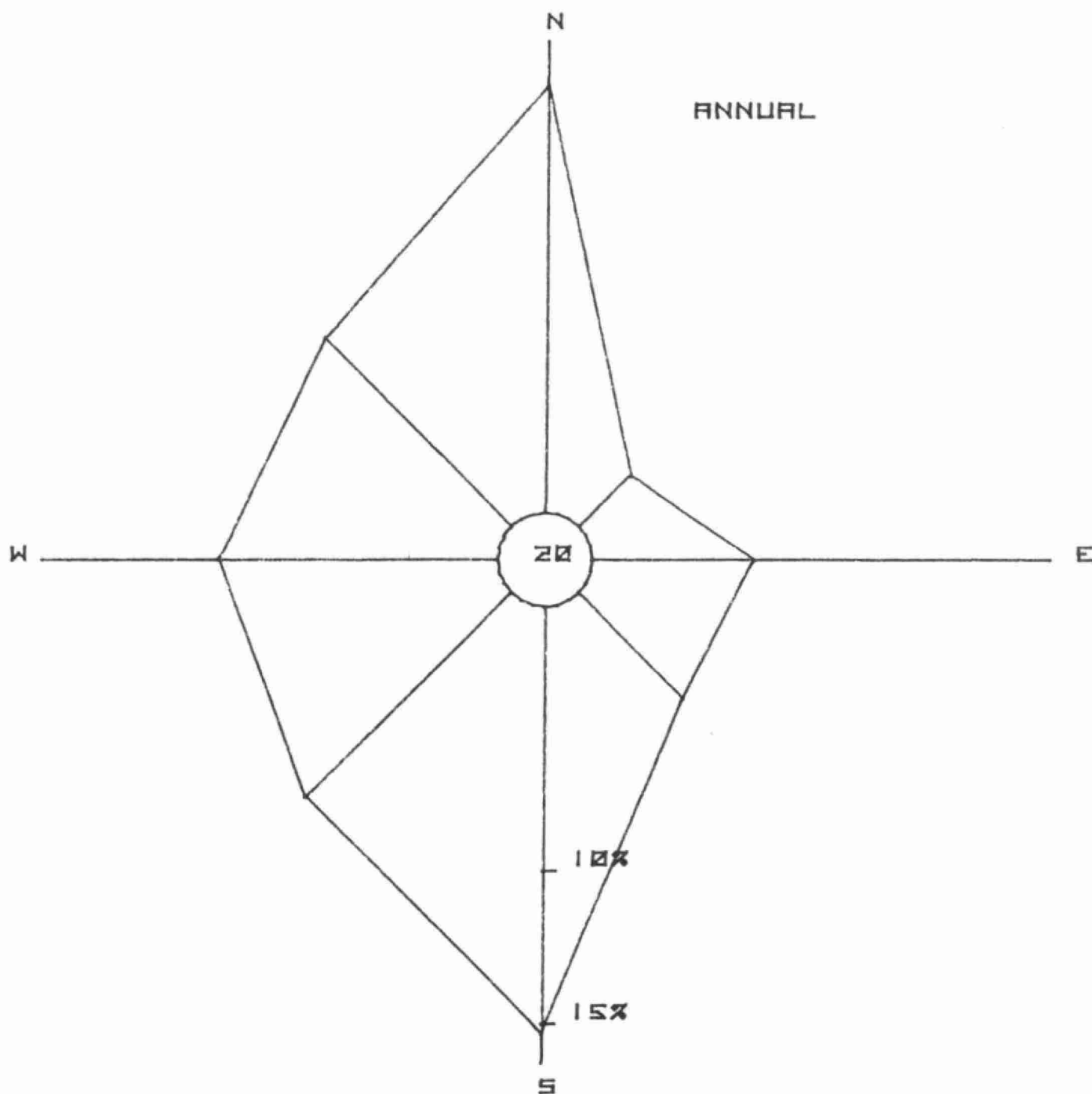


STATION INFORMATION

LOCATED ON SMALL ISLAND 120 KM SW OF
MICHIPICOTEN HARBOUR, ANEMOMETER ON
LIGHTHOUSE MAST IS NOT INDICATIVE OF
SURFACE WINDS, HEIGHT 35.4M

PERCENTAGE FREQUENCY

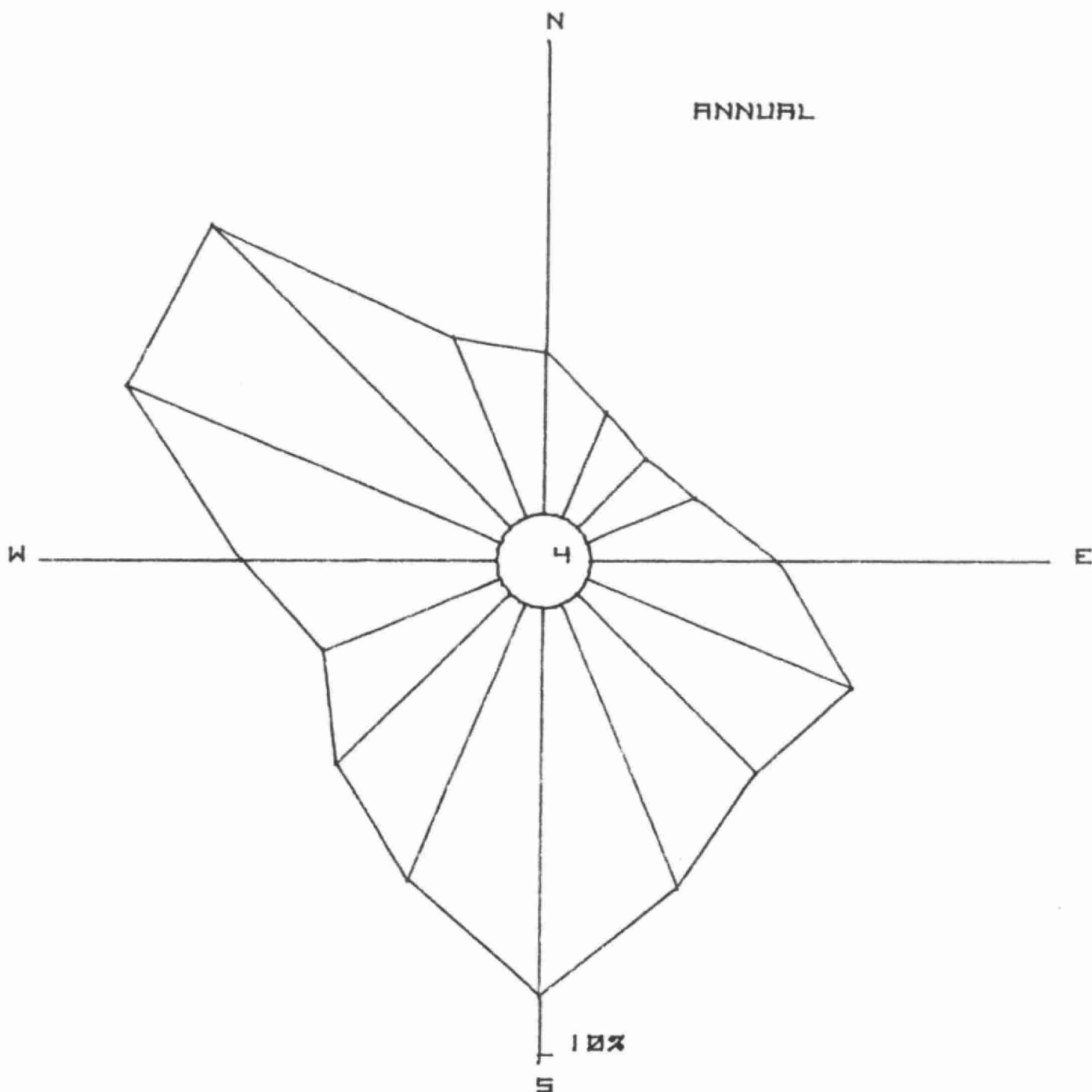
N	NE	E	SE	S	SW	W	NW	CALM
12	8	8	14	18	10	18	15	0



STATION INFORMATION
 LOCATED WAS IN
 FAIRLY FLAT BUSH
 COUNTRY AT CARTIER
 HEIGHT UNKNOWN

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
15	4	7	8	15	11	11	10	20

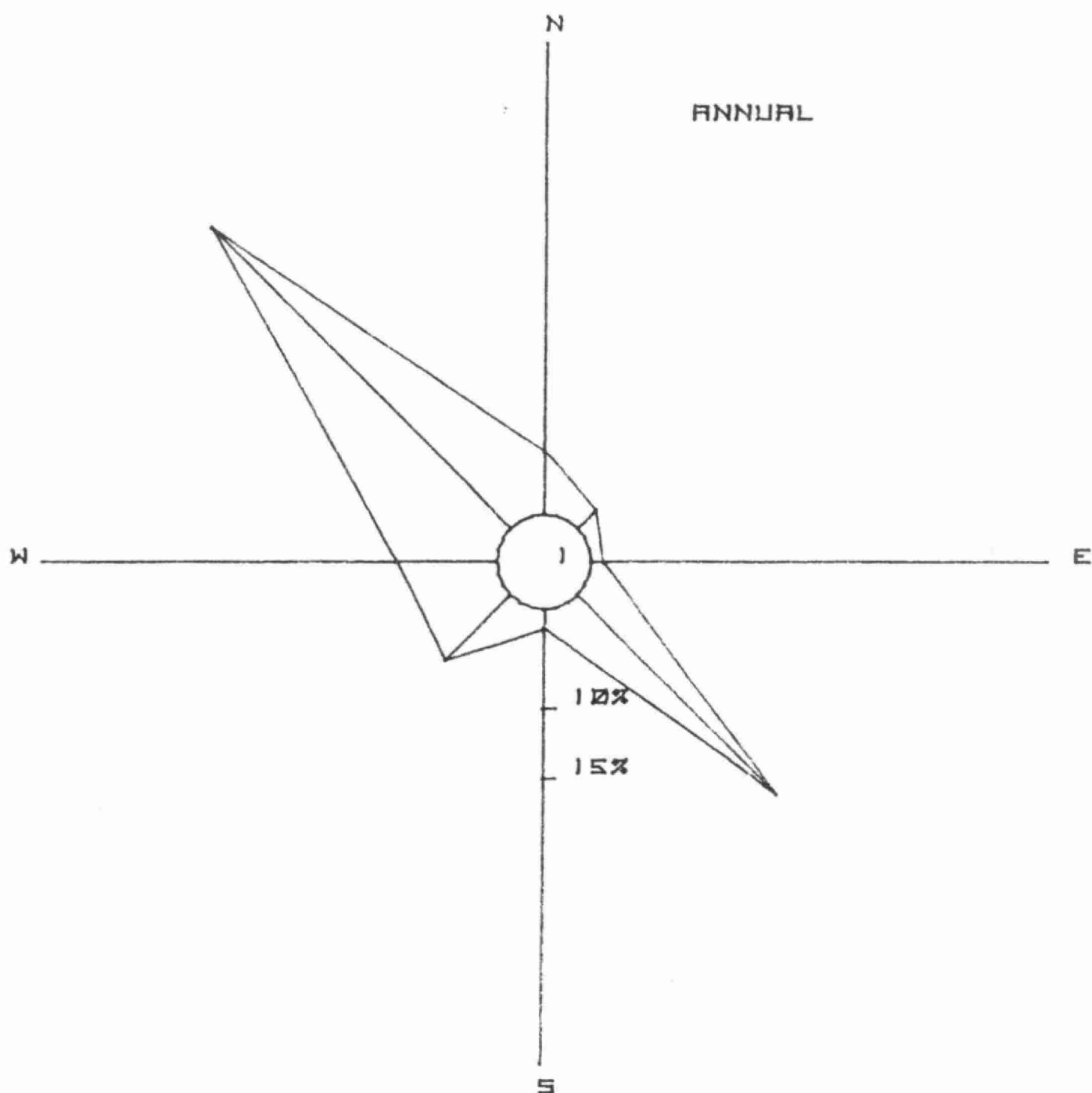


STATION INFORMATION

LOCATED IN
FLAT COUNTRY 2.4KM W OF TOWN AND
19.2KM E OF LAKE HURON
HEIGHT 20.6M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
4	3	3	3	5	7	6	7	8	7	6	5	6	8	10	5	4

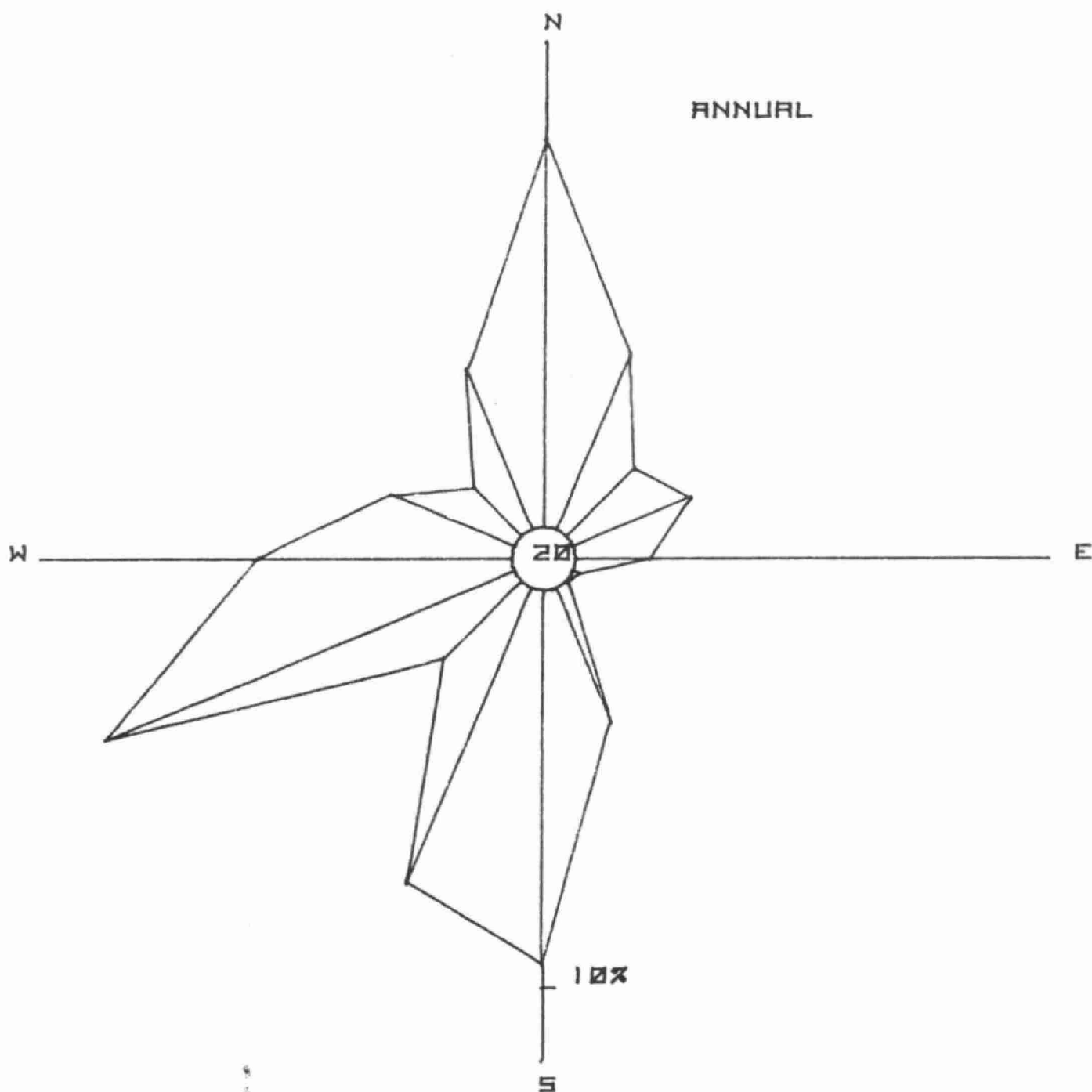


STATION INFORMATION

LOCATED DOMINION FORESTRY STN 1.6KM S OF
TOWN IN A SHALLOW E-W VALLEY. ROLLING
WOODED COUNTRY AROUND STN.
HEIGHT 24.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	5	4	23	5	10	10	33	1

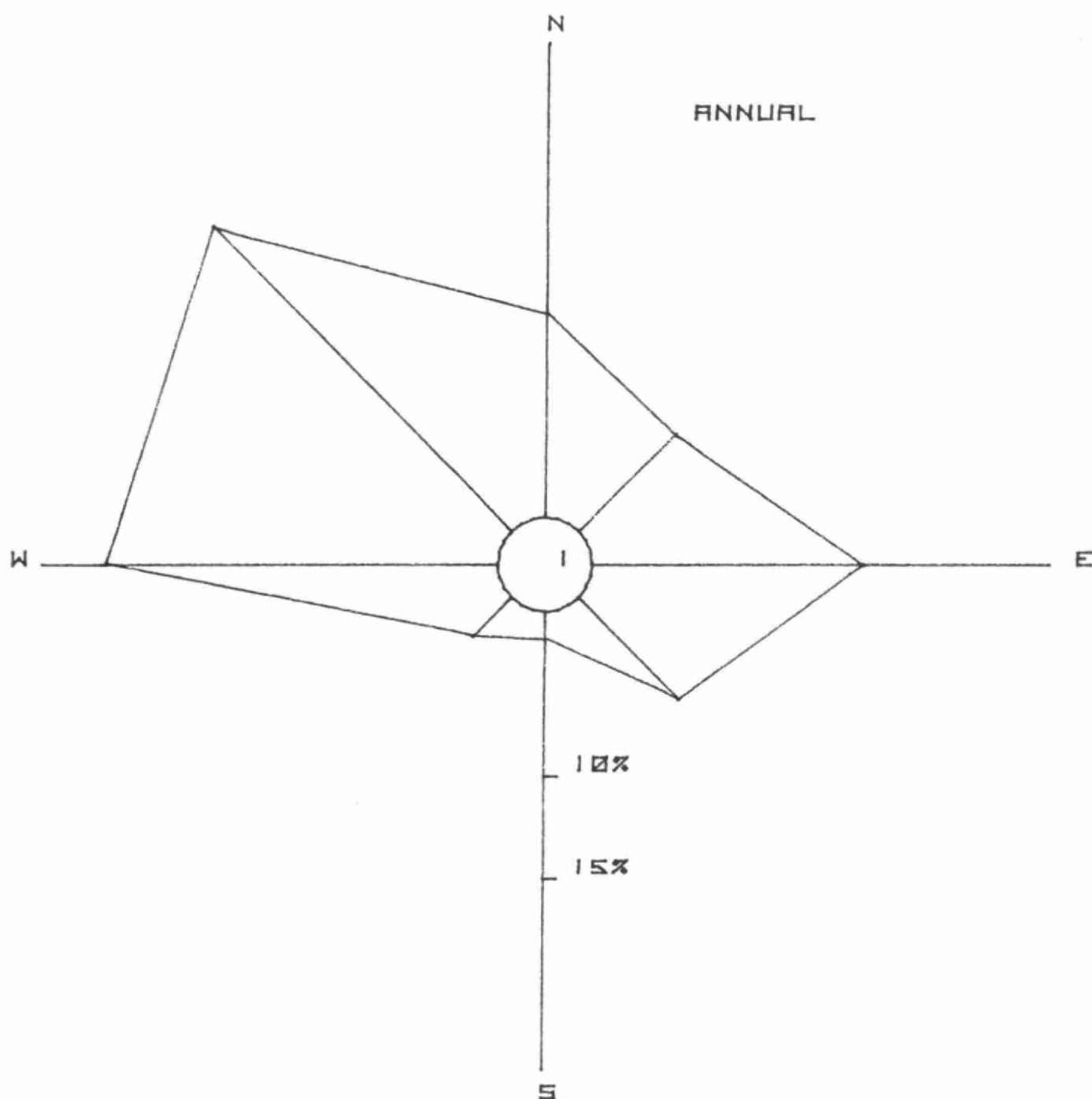


STATION INFORMATION

LOCATED E BANK OF CHAPLEAU RIVER, WOODED
AND HILLY WITH MANY LAKES AND RIVERS,
SURROUNDED BY VARIOUS BLDGS.
HEIGHT 13.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
0	5	3	4	2	1	1	4	10	8	3	11	7	4	2	5	20

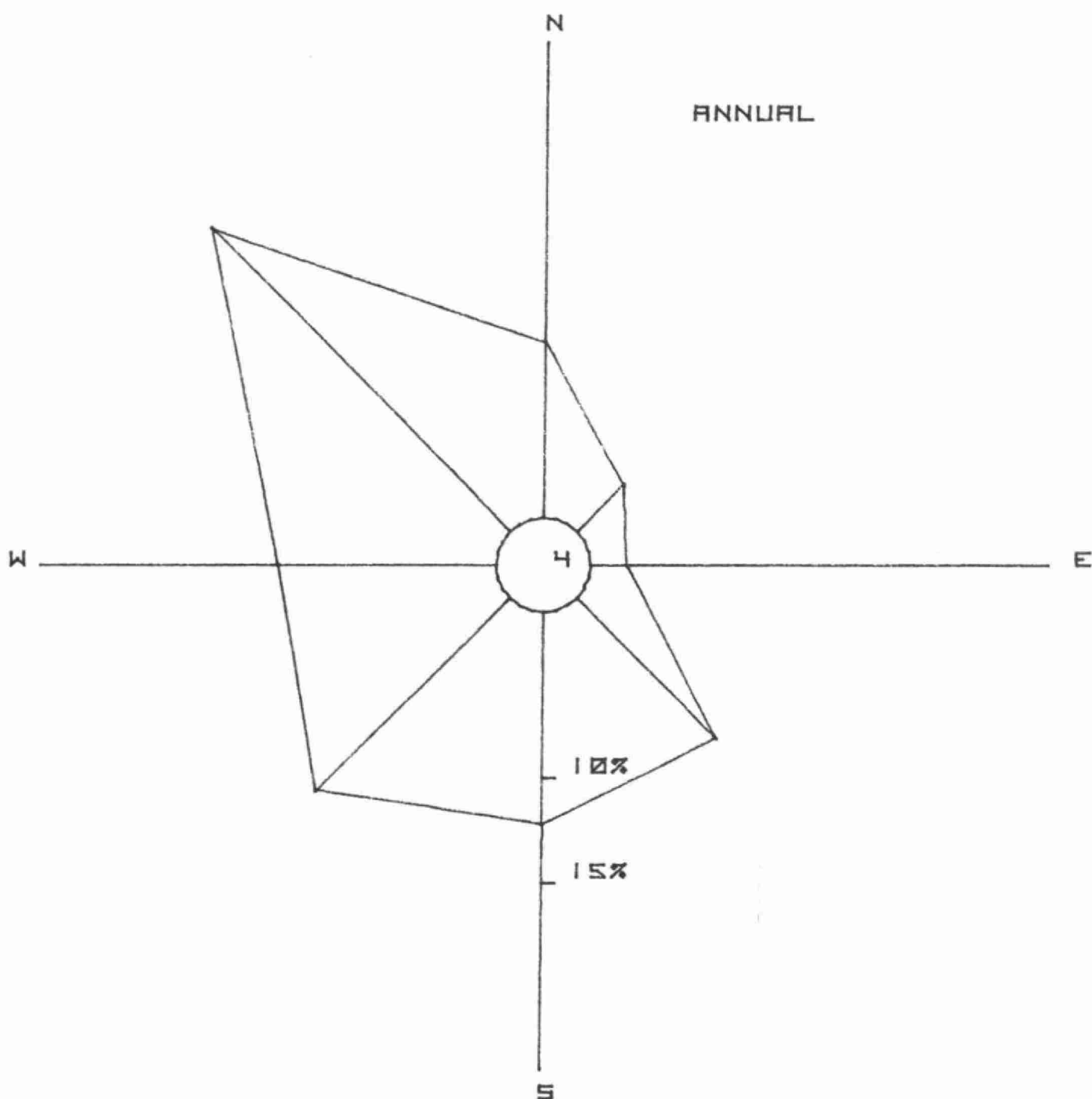


STATION INFORMATION

LOCATED WHEN IT WAS OPERATED
 WAS ON DOCK IN
 HARBOUR AT COBBOURG
 HEIGHT 12.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
12	8	15	8	4	5	21	23	1

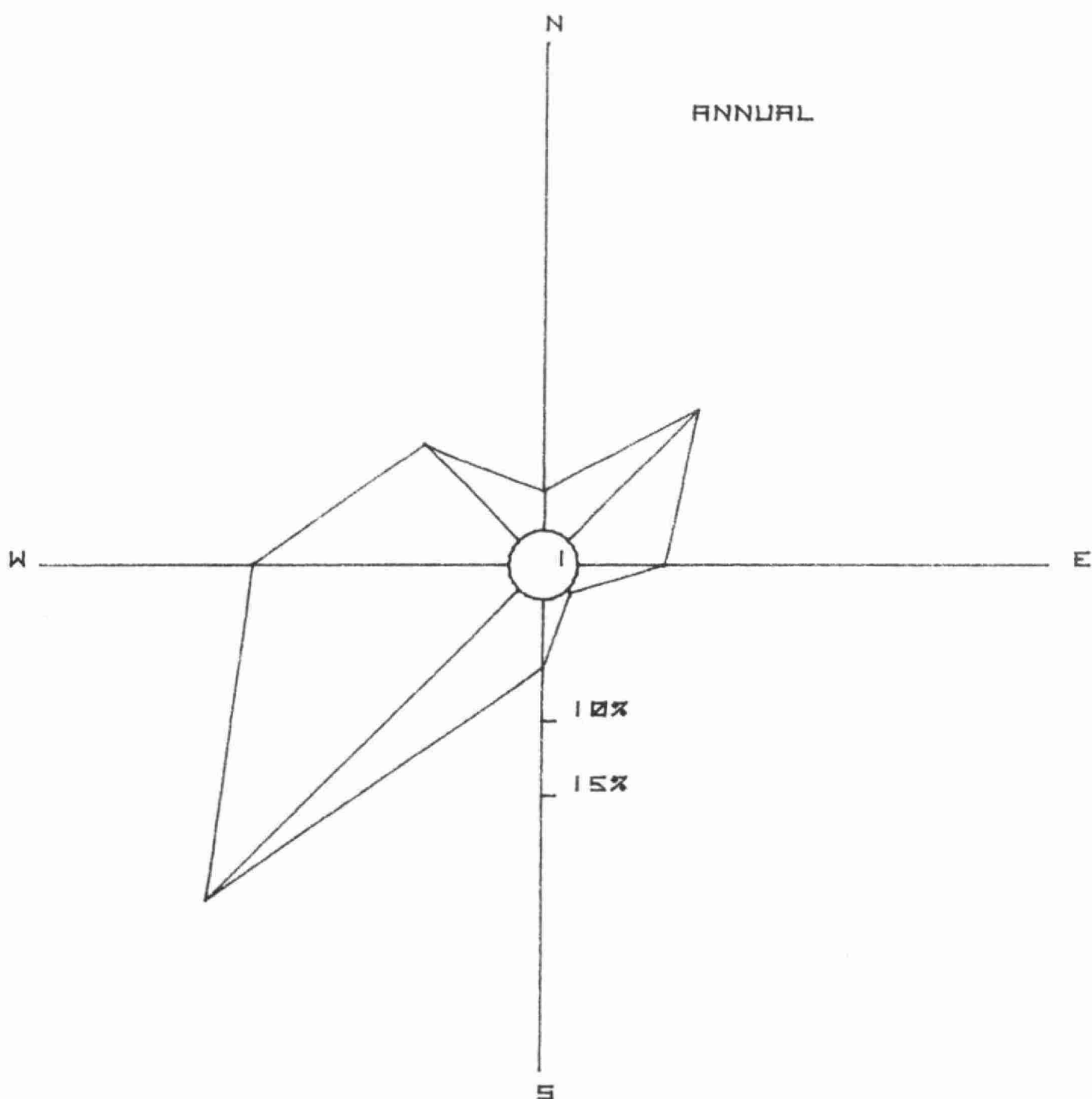


STATION INFORMATION

LOCATED WHEN OPERATED WAS
ON HIGHEST RIDGE OF LAND
RUNNING E-W THROUGH TOWN.
HEIGHT 12.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
11	5	4	12	12	15	13	23	4

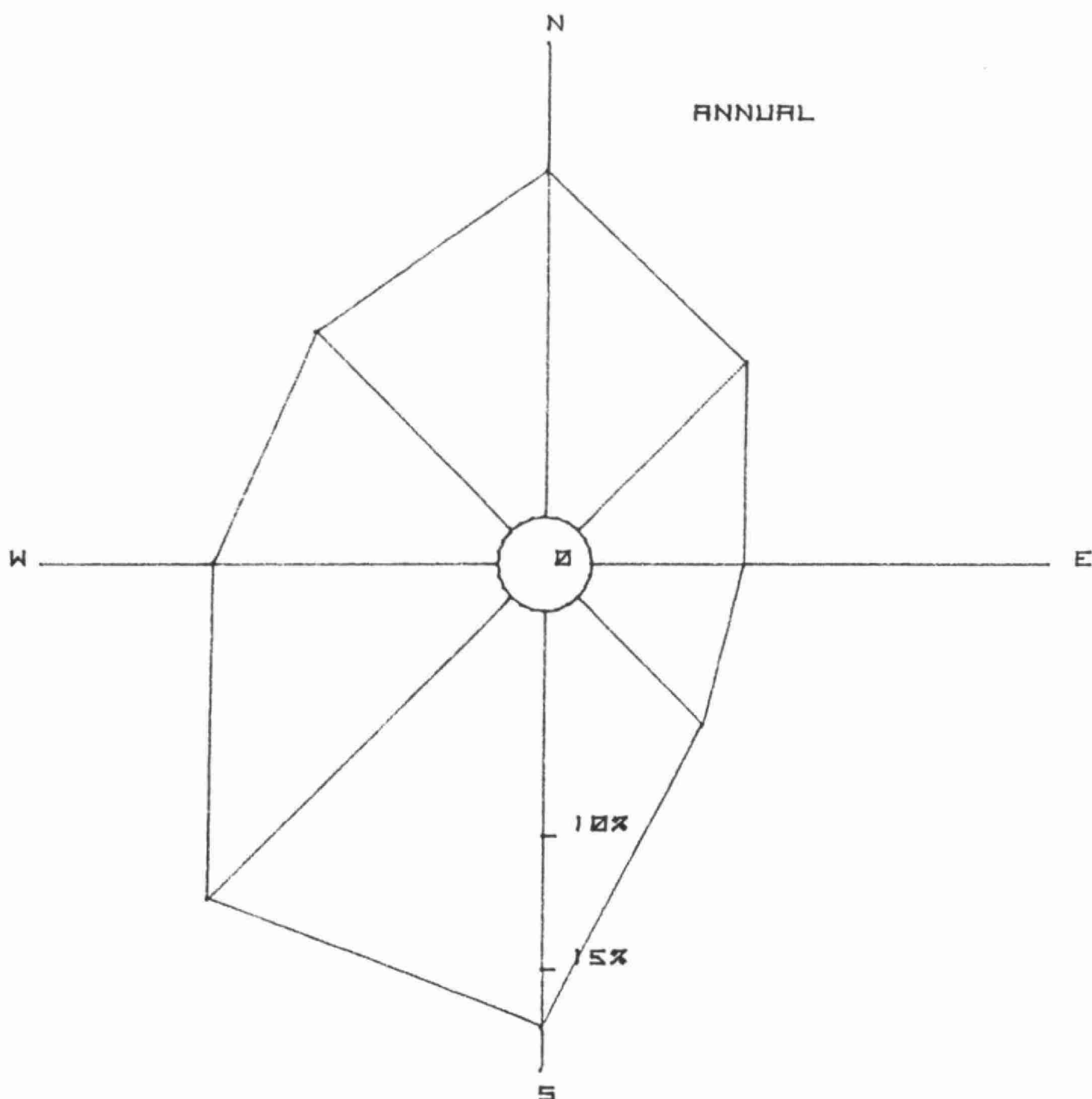


STATION INFORMATION

LOCATED AT TRANSFORMER SITE NW
OF CORNWALL, AREA FLAT, WITH
TOWERS IN ALL DIRECTIONS
HEIGHT 22.5M

PERCENTAGE FREQUENCY

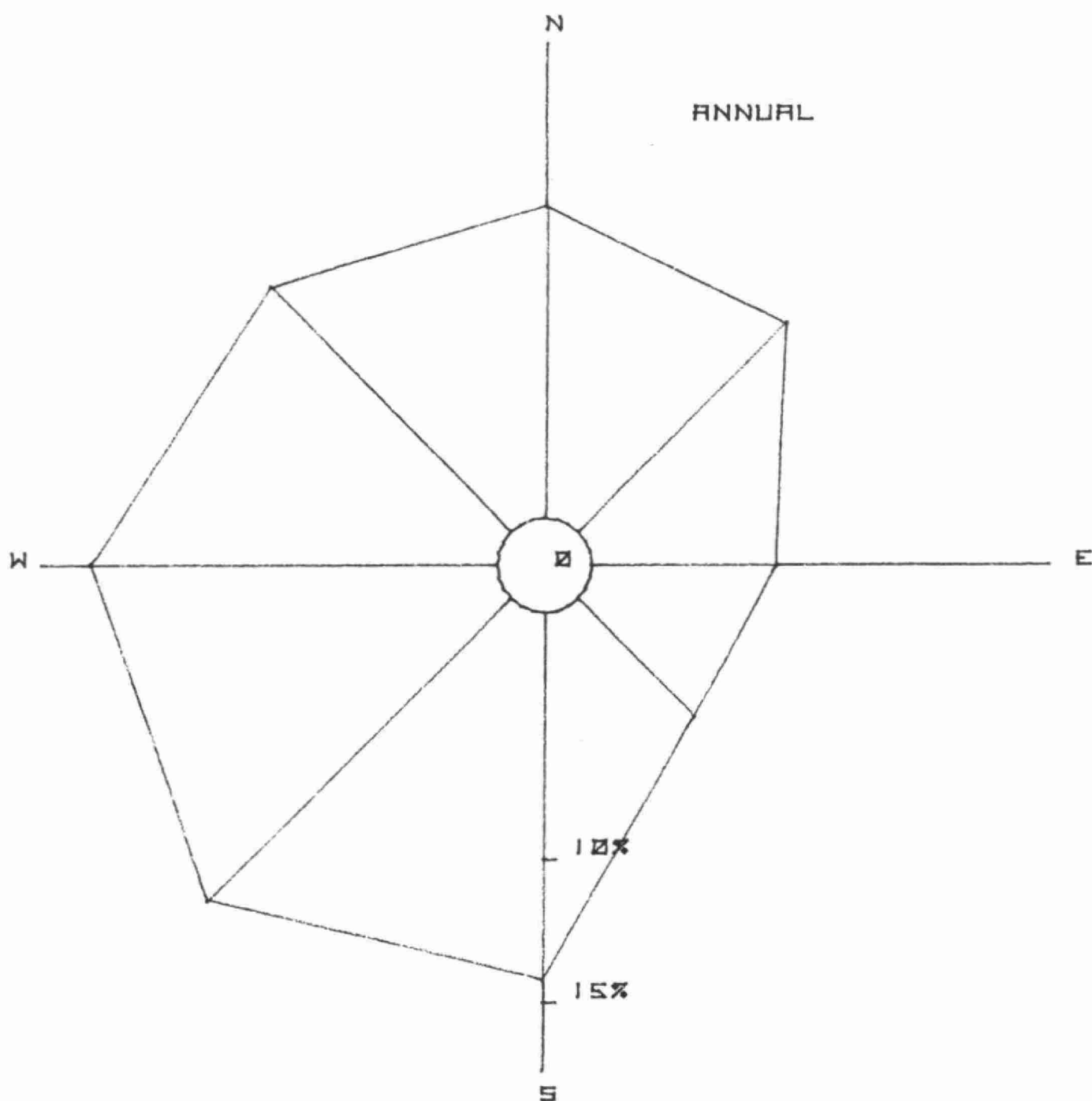
N	NE	E	SE	S	SW	W	NW	CALM
5	14	8	3	7	32	18	11	1



STATION INFORMATION
 LOCATED
 OPPOSITE LAMBTON GS
 HWY 40 COURTRIGHT
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
15	11	7	8	17	18	12	12	0

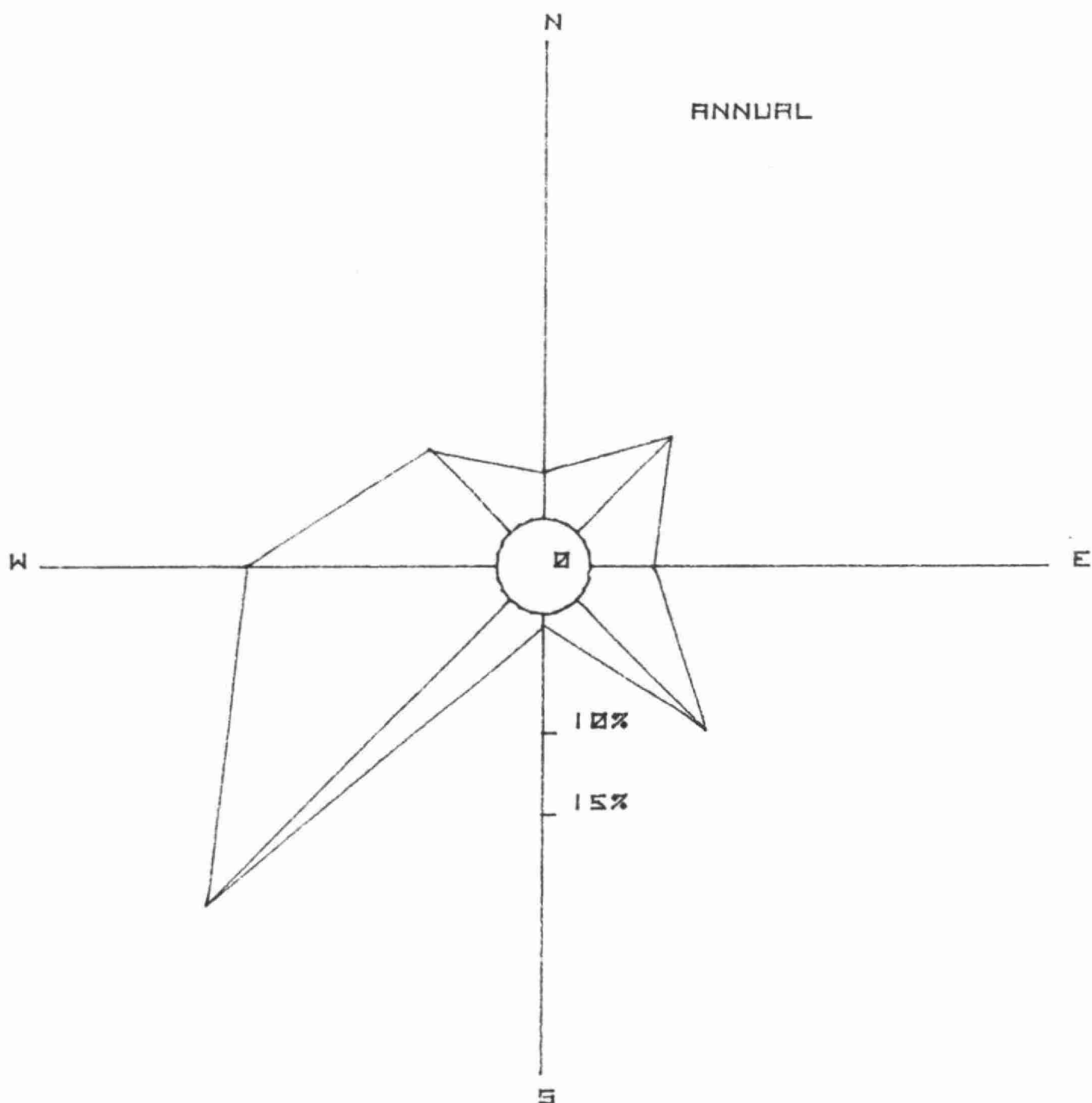


STATION INFORMATION

LOCATED
OPPOSITE LAMBTON GS
HWY 40 COURTRIGHT
HEIGHT 30.8M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
12	12	8	7	14	16	18	14	0

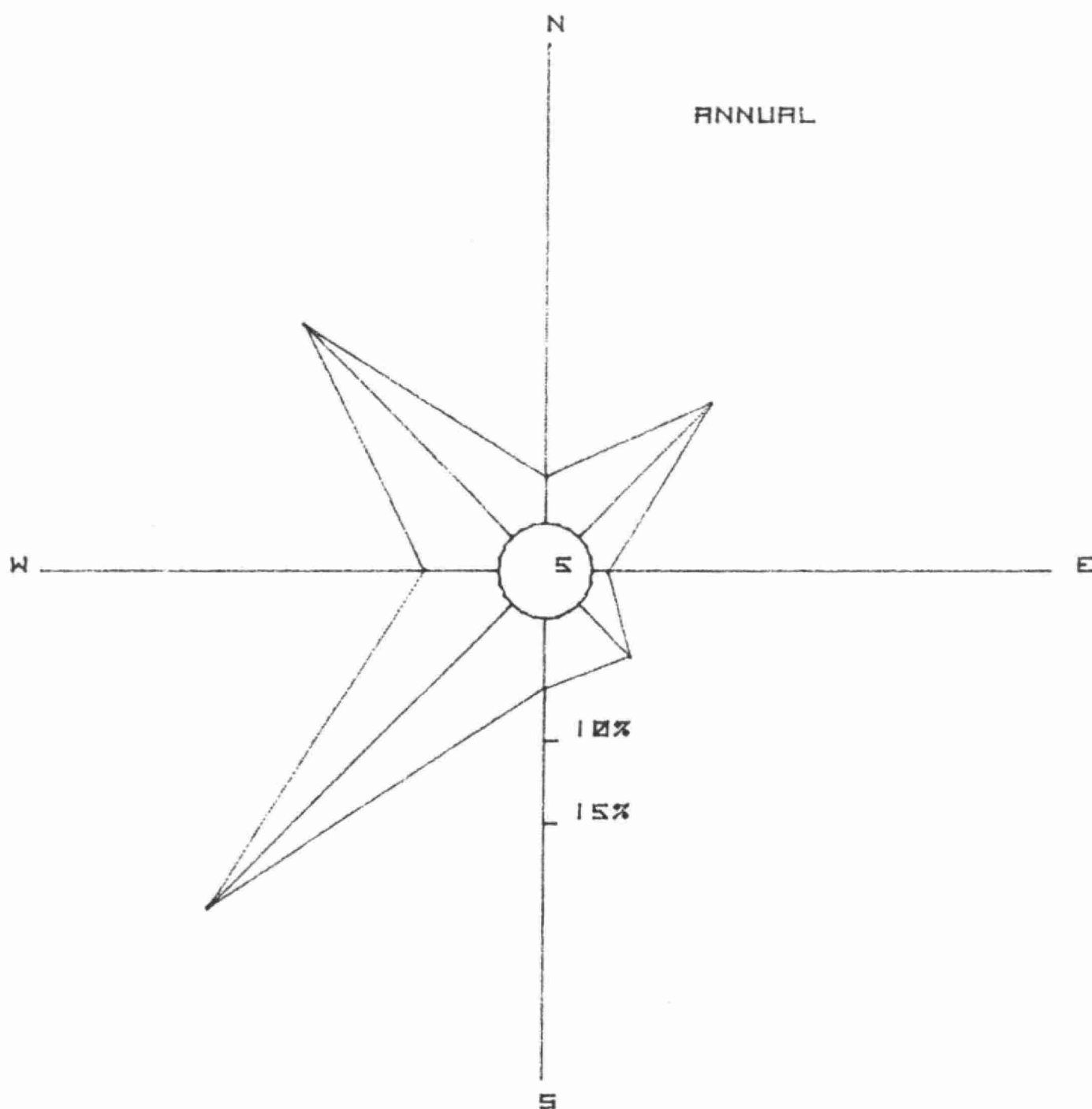


STATION INFORMATION

LOCATED NR LIGHTHOUSE, NE TIP OF ISLAND,
POOR EXPOSURE FROM S TO SW CAUSED BY HIGH
WOODED AREA, OTHERWISE GOOD EXPOSURE
HEIGHT 12.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
6	11	7	14	4	28	18	10	0

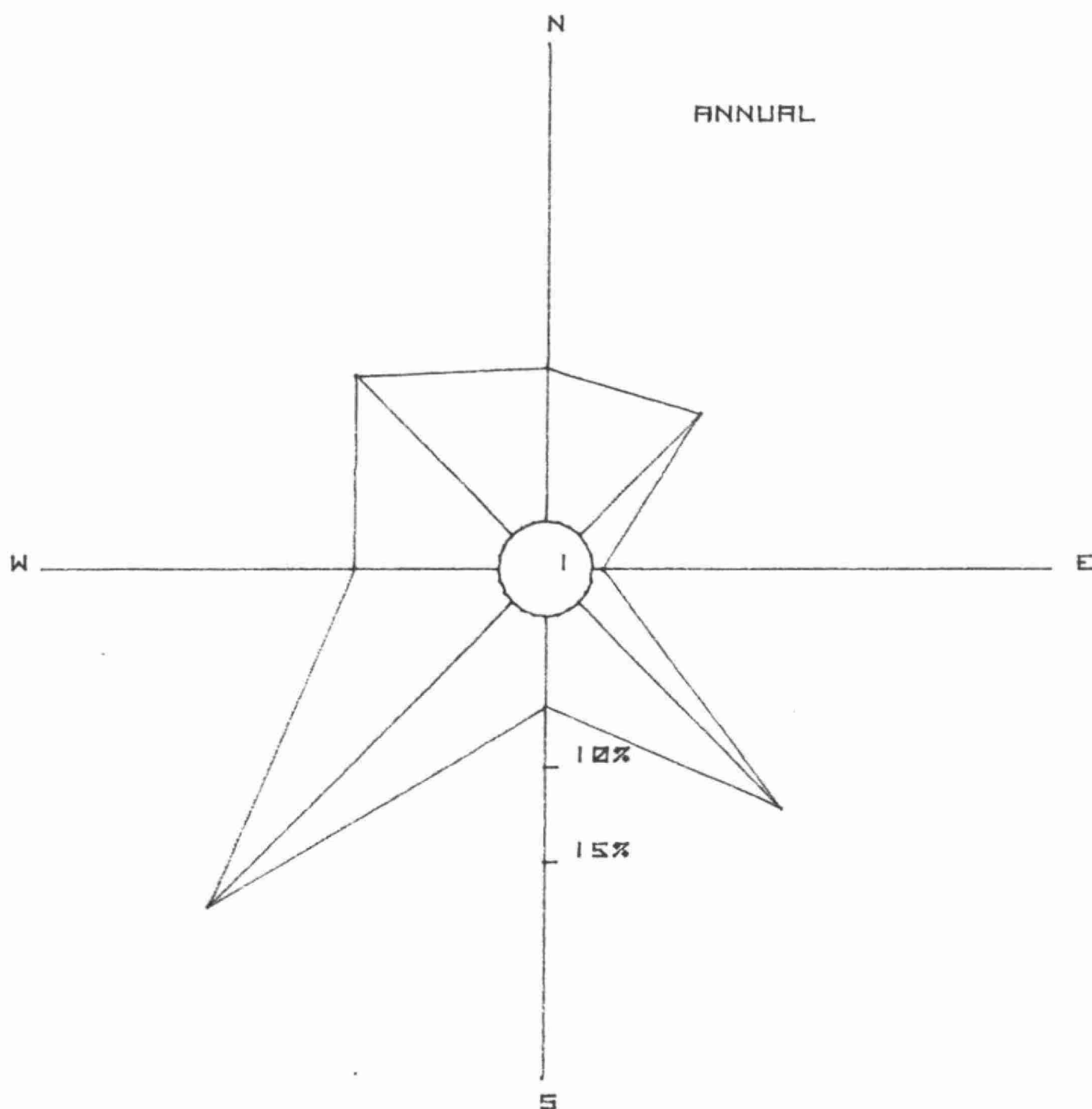


STATION INFORMATION

LOCATED AT EXPERIMENTAL FARM, AREA FLAT,
 ROLLING LAND IN DISTANCE WITH TREES 4-5M
 TALL 84M AWAY, NEAREST BLDG 64M
 HEIGHT 9.9M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	14	4	7	7	28	7	21	5

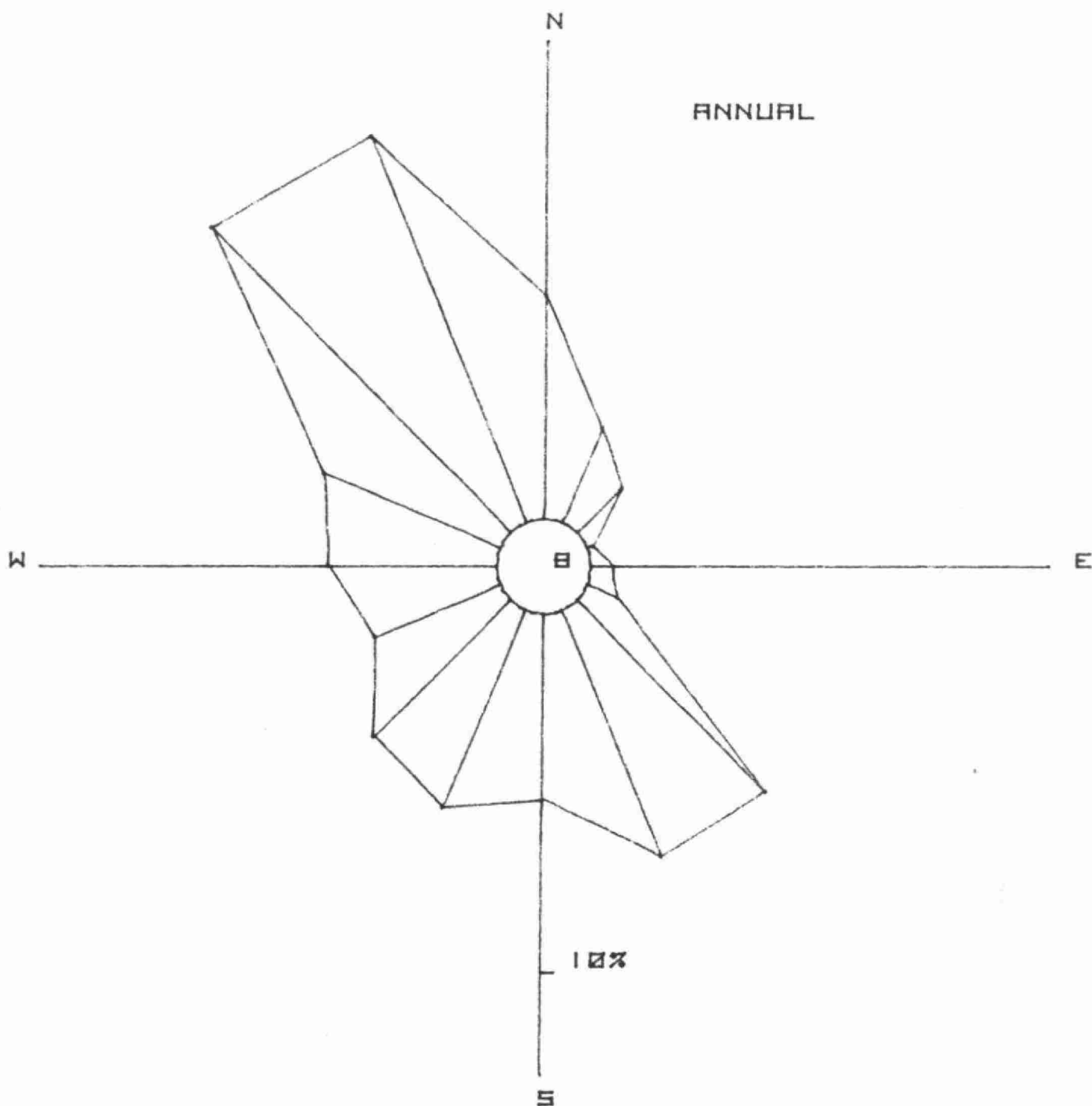


STATION INFORMATION

LOCATED 12M E LAKE SHORE IN FLAT HEAVILY
 WOODED AREA. S WINDS AFFECTED BY WOODS AND
 NE WINDS BY POWER PLANT
 HEIGHT 13.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
0	1	3	10	7	25	10	14	1

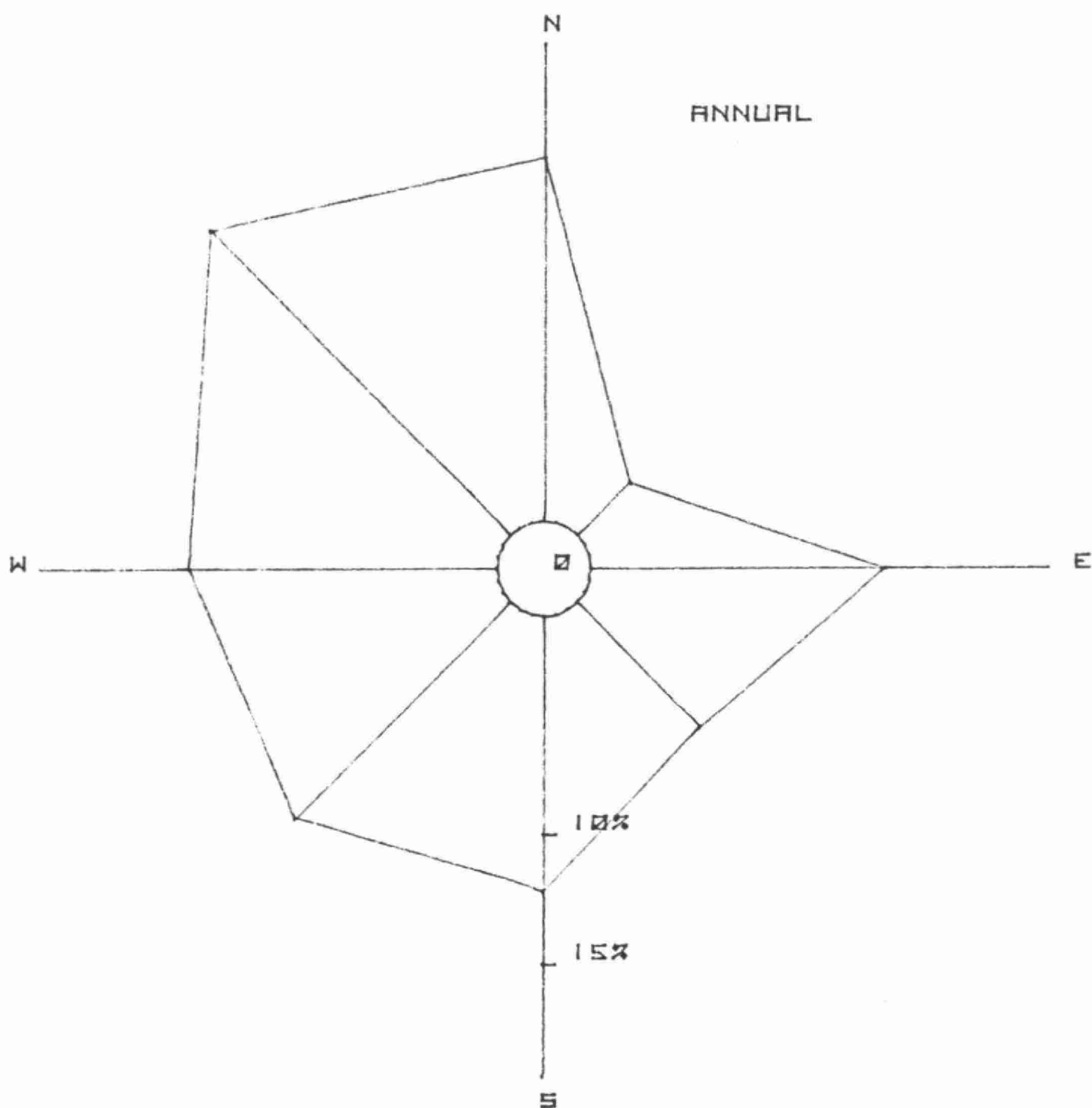


STATION INFORMATION

LOCATED AT AIRPORT 3.1KM
SW OF RAILWAY STN AND VILLAGE,
AREA FLAT AND CLEAR OF BUSH
HEIGHT 19.7M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
7	4	3	1	2	2	8	8	6	6	6	5	5	6	12	12	8

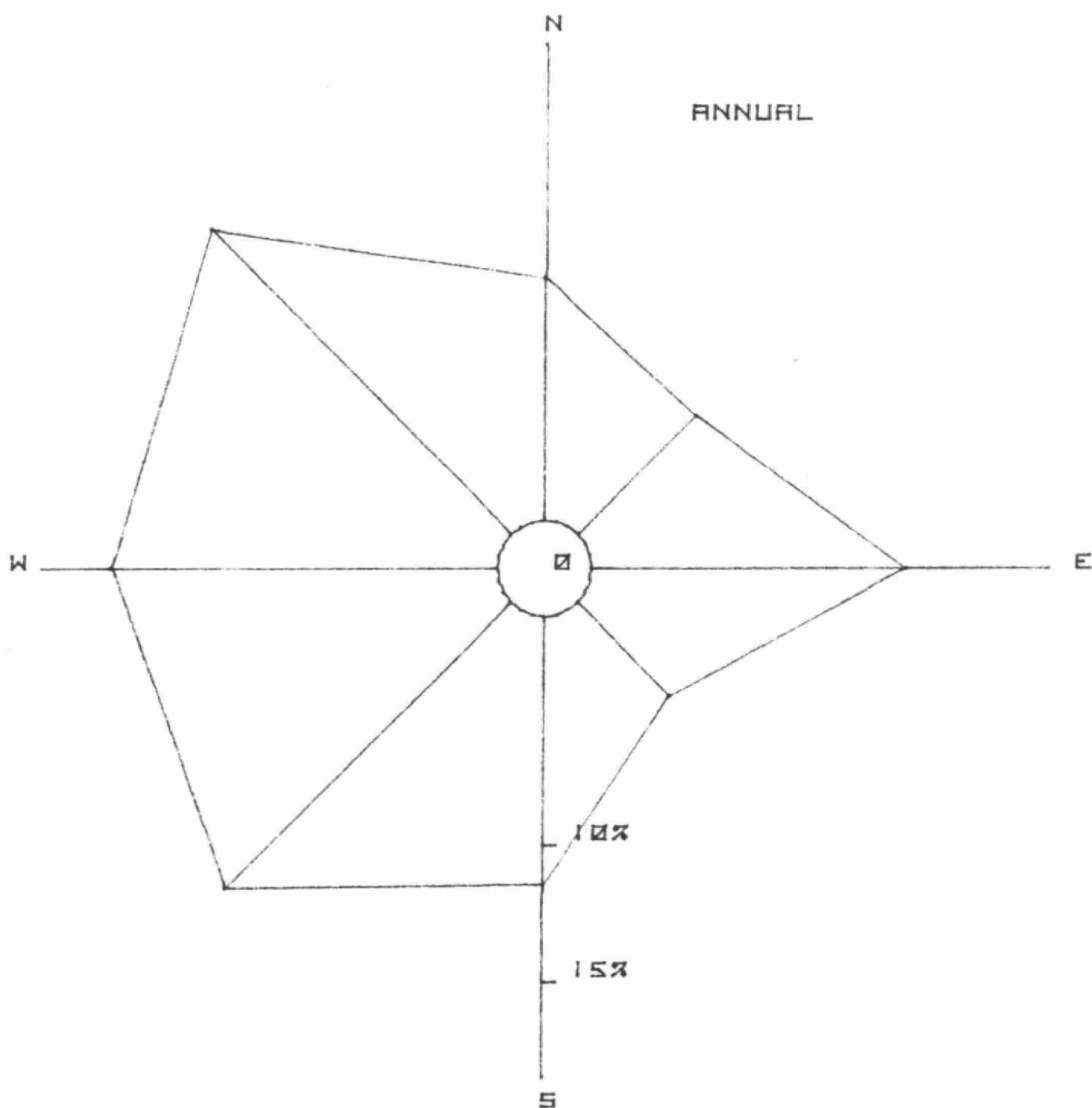


STATION INFORMATION

LOCATED
AT EVANS/ARNOLD STEETS
IN ETOBICOKE
HEIGHT 10.1M

PERCENTAGE FREQUENCY

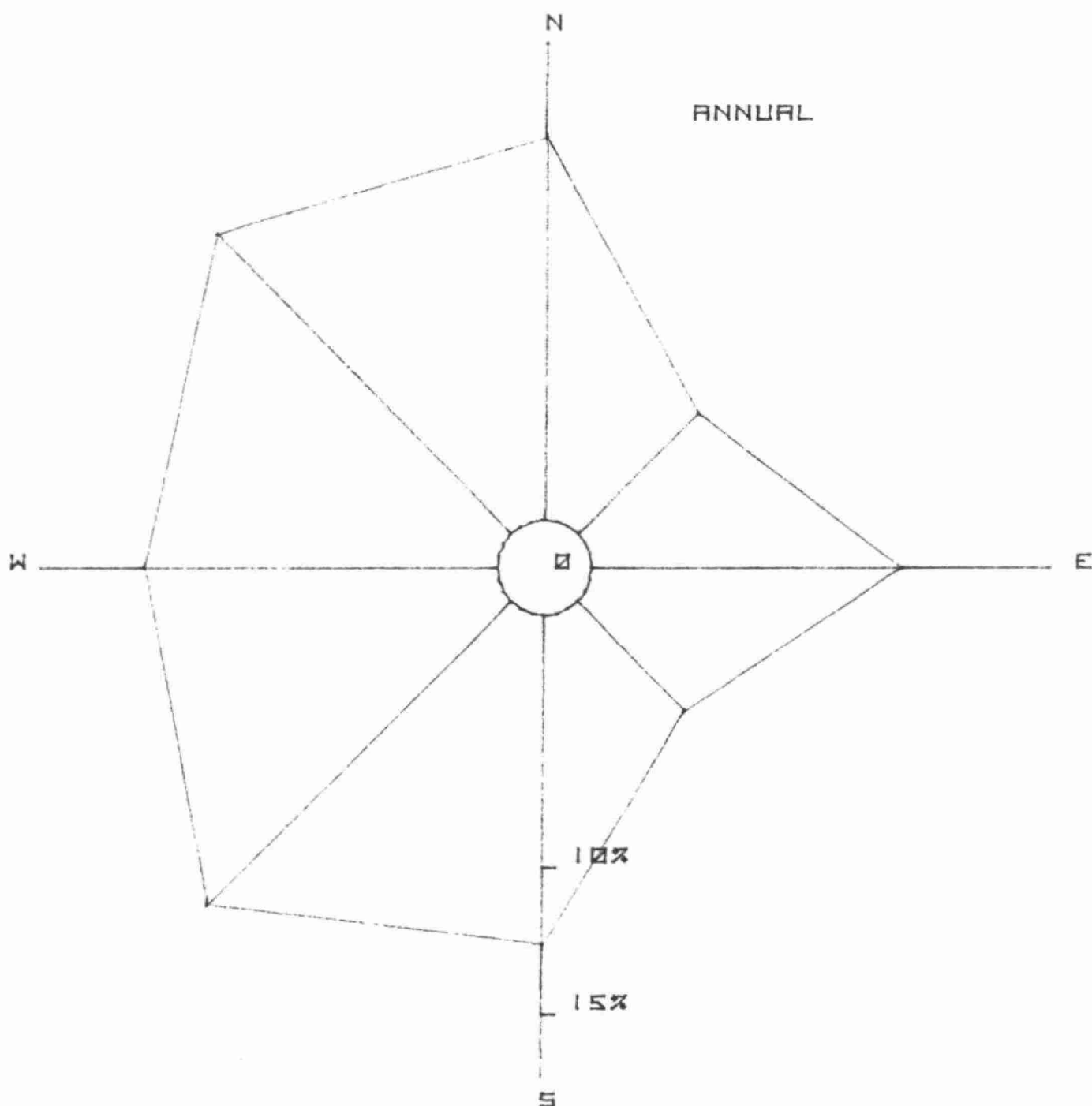
N	NE	E	SE	S	SW	W	NW	CALM
18	5	13	8	21	14	14	16	0



STATION INFORMATION
 LOCATED
 AT EVANS/ARNOLD STREETS
 IN ETOBICOKE
 HEIGHT 30.8M

PERCENTAGE FREQUENCY

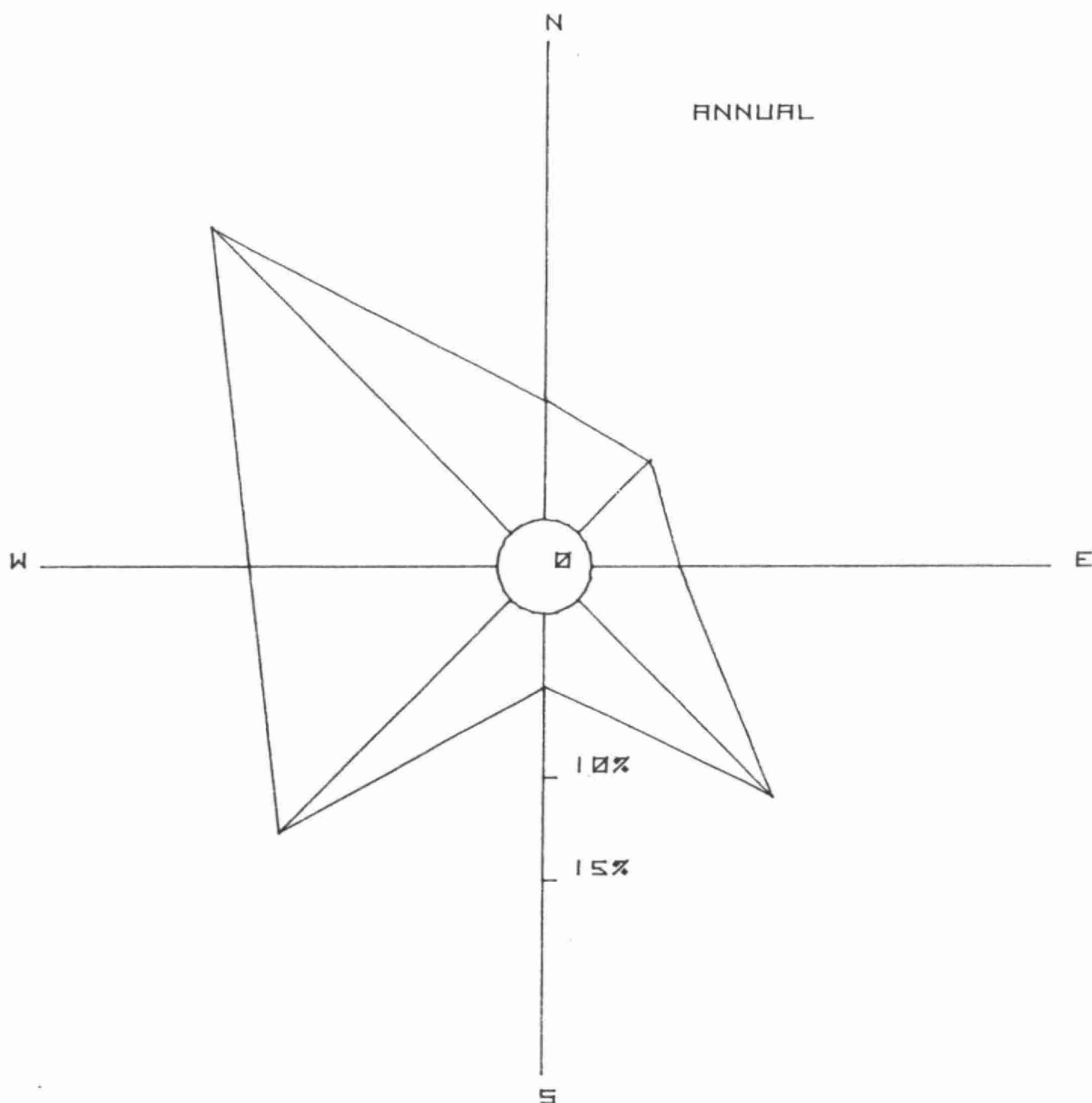
N	NE	E	SE	S	SW	W	NW	CALM
11	8	13	7	12	17	16	16	0



STATION INFORMATION
 LOCATED
 AT EVANS/ARNOLD STREETS
 IN ETOBICOKE
 HEIGHT 92.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
15	7	12	7	13	16	14	16	0

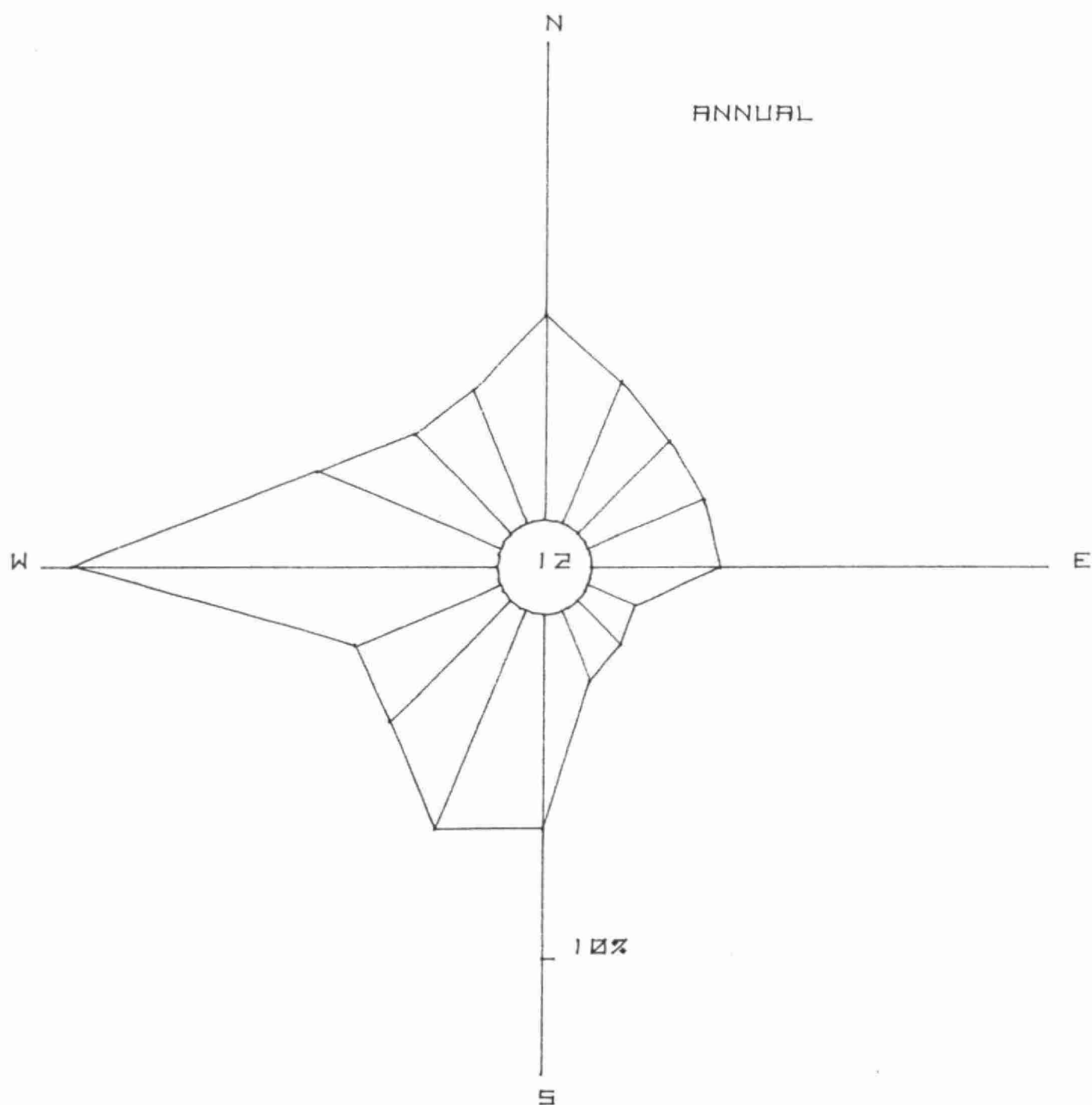


STATION INFORMATION

LOCATED IN ROLLING PARTLY WOODED AREA WITH
ELM TREES 18.5-21.5M HIGH TO N. NW WINDS
EFFECT STN. CAUSING TURBLANCE
HEIGHT 13.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	7	7	16	6	18	14	23	0

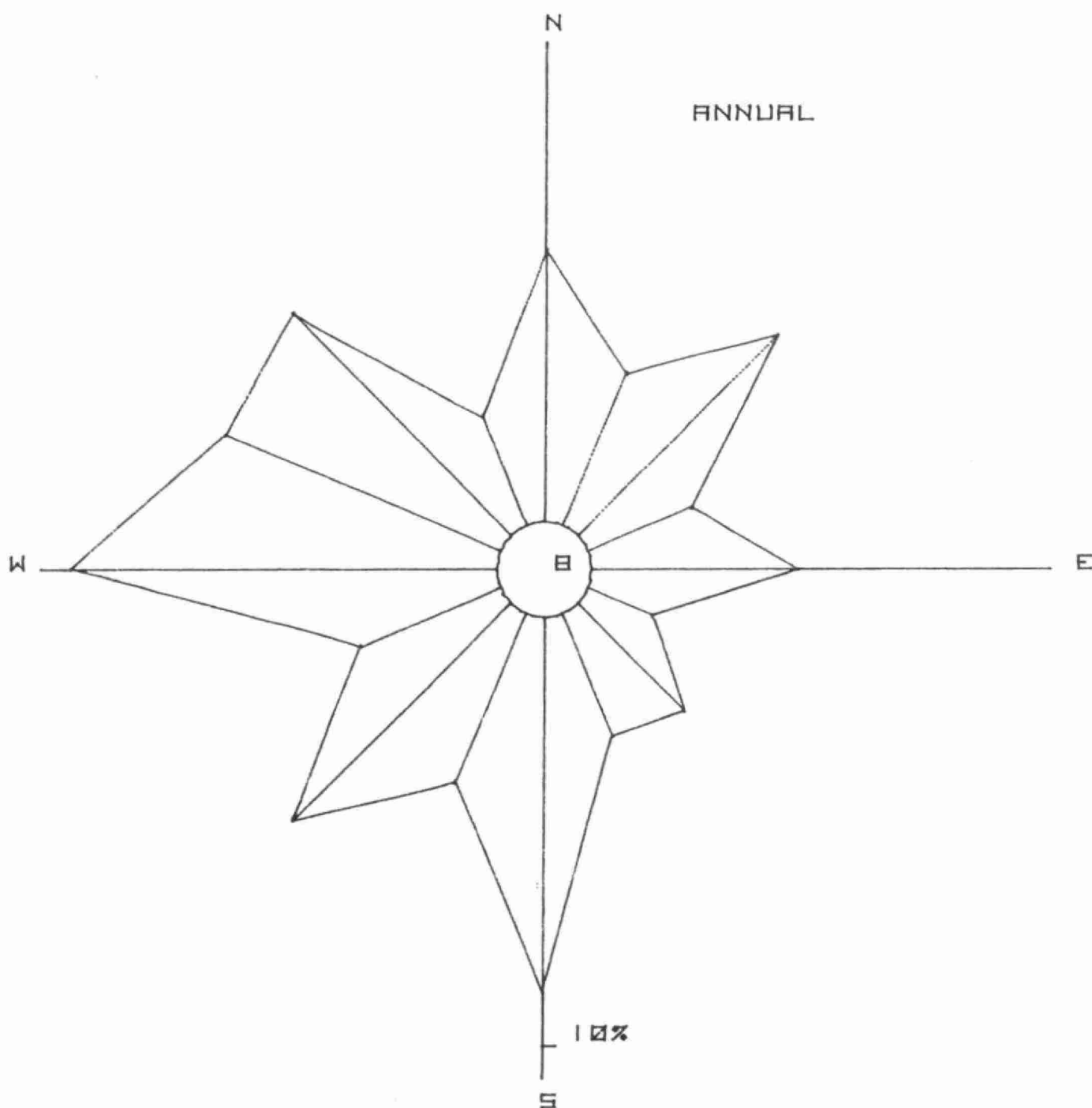


STATION INFORMATION

LOCATED S EDGE TOWN ON W SIDE OF ROAD
OUT OF TOWN TO HWY 11. AREA IS
FLAT WITH NUMEROUS LAKES
HEIGHT 12.6M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
6	5	5	4	5	3	3	3	7	7	6	5	12	6	5	5	12

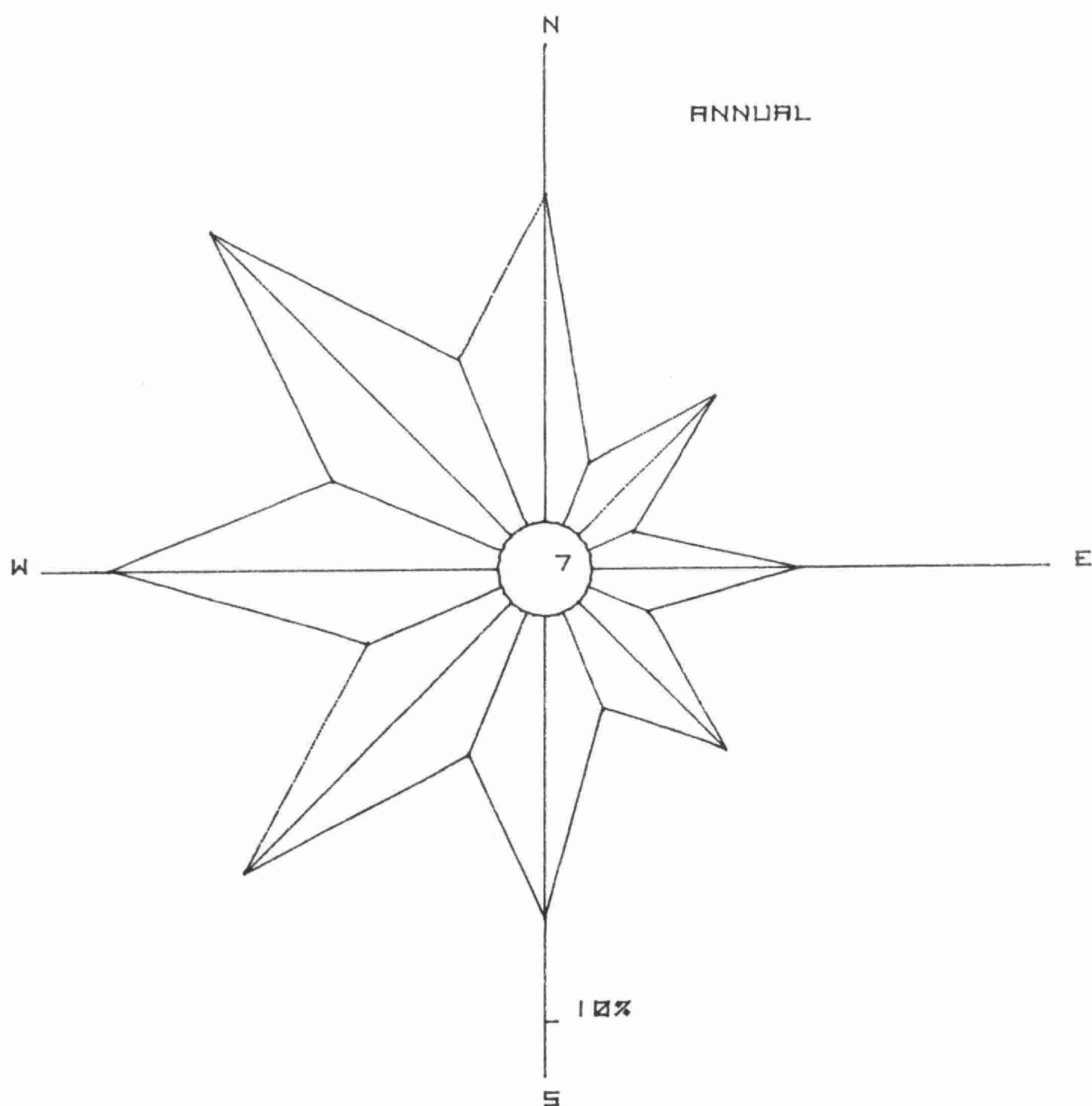


STATION INFORMATION

LOCATED 1.2KM TO N AND E IN FLAT AREA,
 ANEMOMETER TOWER IS 3.8M S OF OPS BLDG,
 BASE OF TOWER 6.2M ABOVE GROUND.
 HEIGHT 9.8M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
7	4	7	3	5	2	4	4	9	5	8	4	10	7	8	3	8

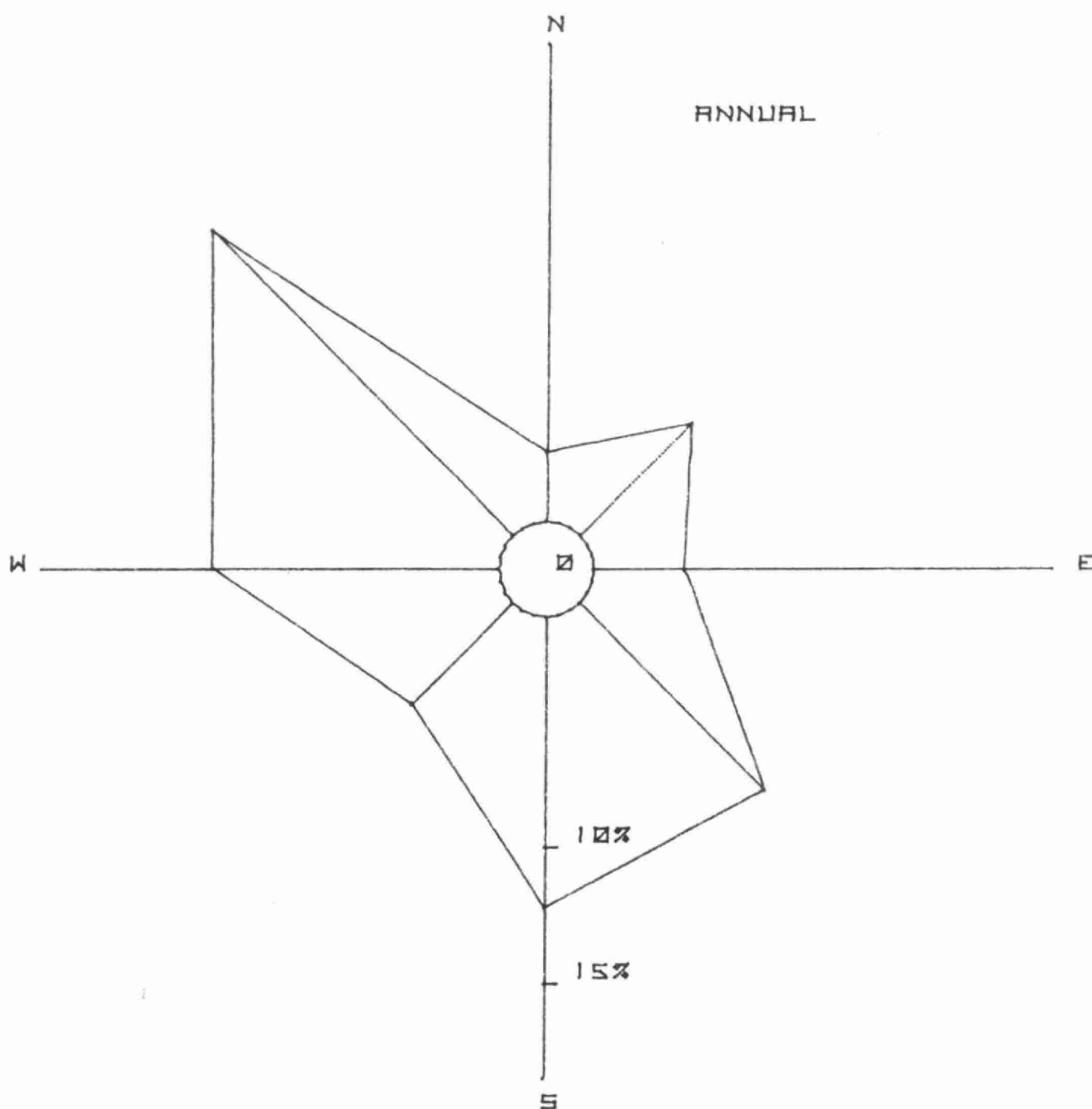


STATION INFORMATION

LOCATED 3.2KM NW OF VILLAGE IN WOODED
AREA WITH LOW ROLLING HILLS AND MANY
SMALL LAKES.
HEIGHT. 16M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
0	3	5	2	6	2	6	3	8	4	10	4	10	5	11	5	7

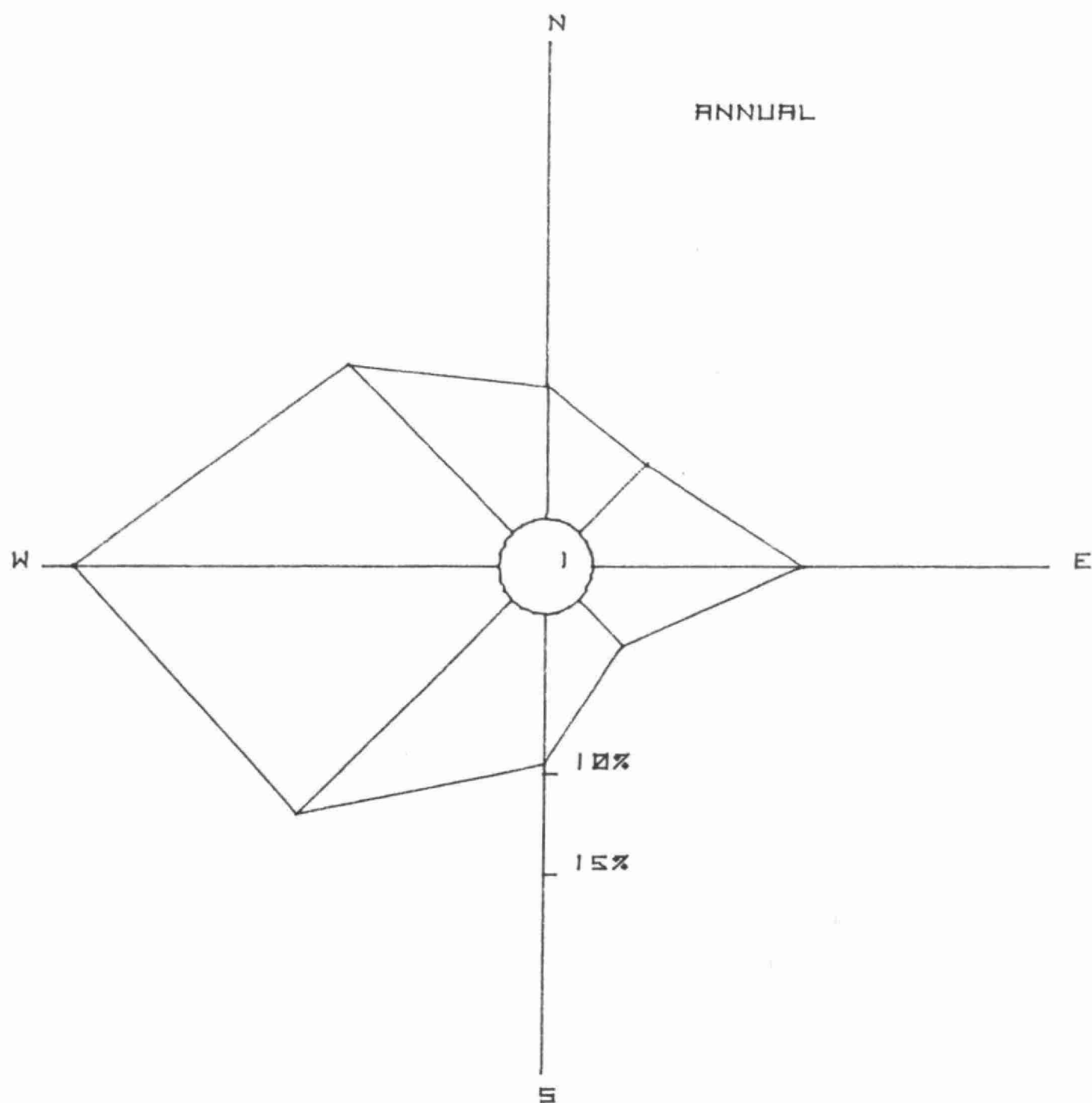


STATION INFORMATION

LOCATED ON LIGHTHOUSE NE ON ISLAND. A HILL
IS IN CENTRE OF ISLAND 3.2KM N FROM LIGHT-
HOUSE. AREA IS WOODDED WITH TALL TREES.
HEIGHT 28.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
4	8	5	11	12	7	12	18	0

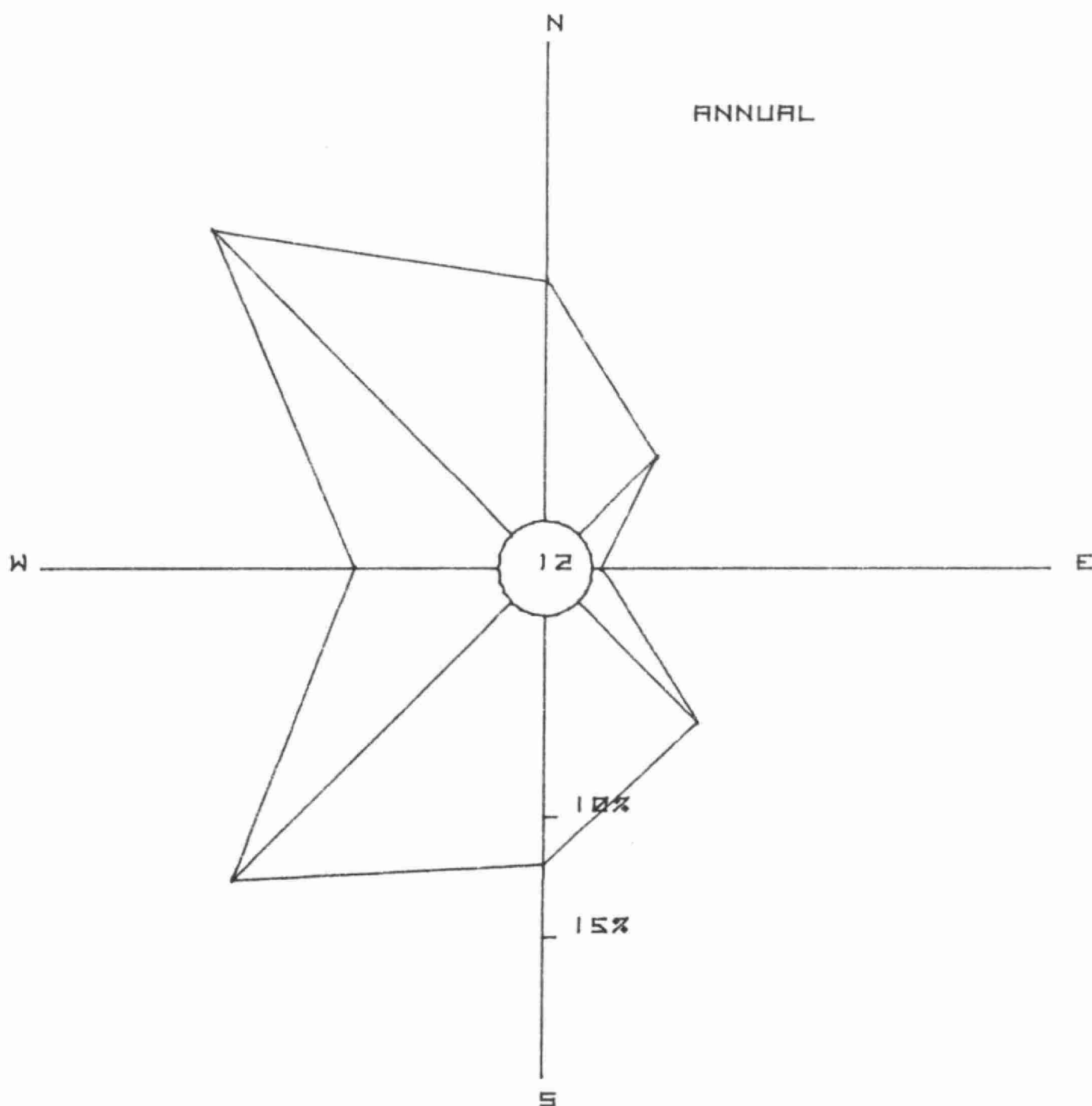


STATION INFORMATION

LOCATED AT DAC AREA FLAT SURROUNDED BY
TEST PLOTS FOR VARIOUS CROPS, COUNTRYSIDE IS
ROLLING FARM LAND.
HEIGHT 10M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	7	13	5	10	17	24	14	1



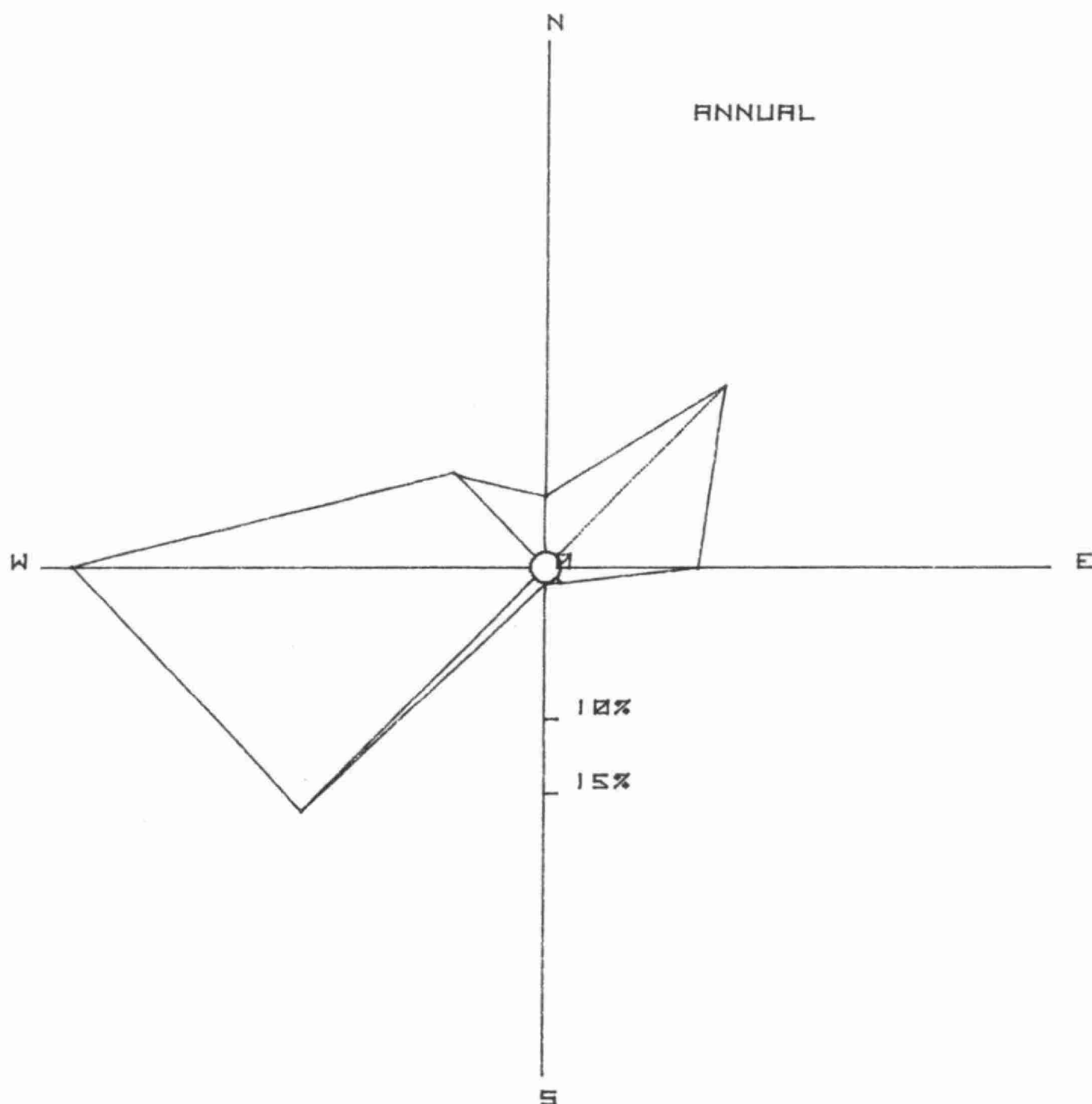
STATION INFORMATION

LOCATED WAS IN TOWN ON W SIDE OF LAKE
TEMISKAMING WITH GRADUAL UPSLOPE W AWAY
FROM LAKE.

HEIGHT 12.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
12	6	2	8	12	18	8	20	12

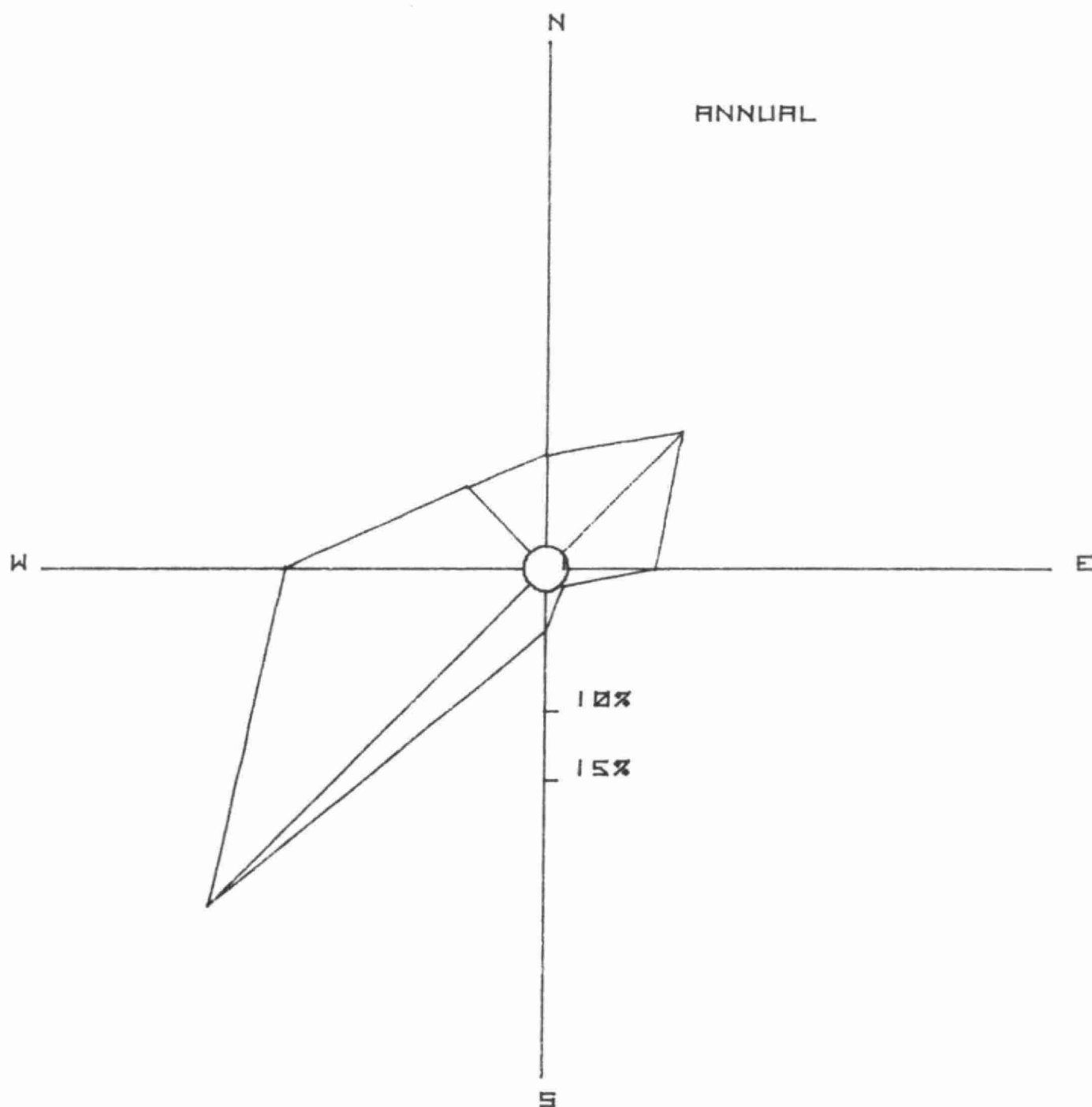


STATION INFORMATION

LOCATED ON PIPE MAST ATOP POLICE BLDG.
 AT DOCK ON S SIDE AT W END OF HARBOUR.
 LAKE ONTARIO 5KM E/ESCARPMENT 3.2KM S.
 HEIGHT 15.7M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
5	17	10	1	1	23	32	8	0

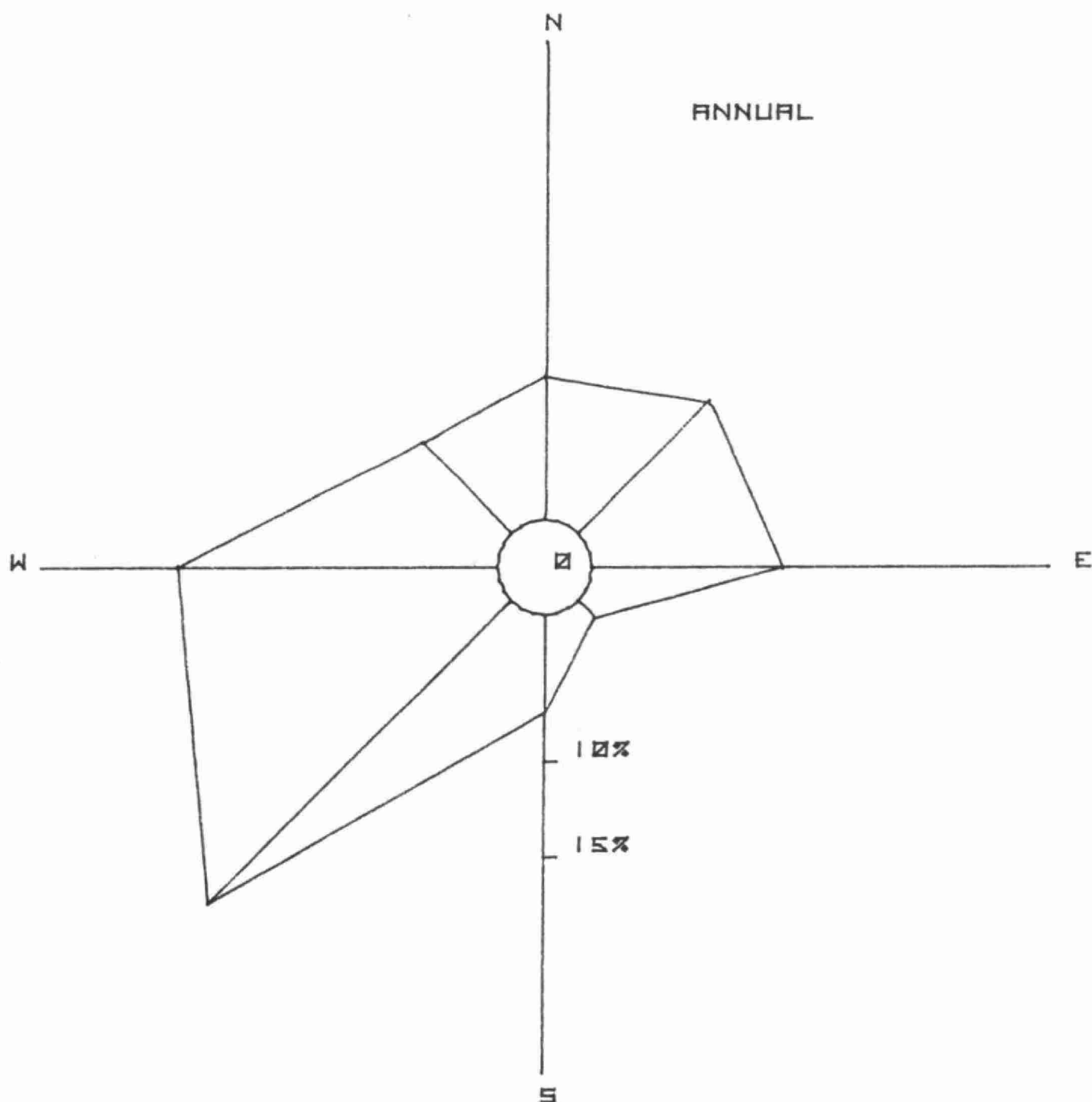


STATION INFORMATION

LOCATED ROYAL BOTANICAL GARDENS ADMIN
BLDG W END AND .4KM N OF HARBOUR,
AREA FLAT.
HEIGHT 17.7M

PERCENTAGE FREQUENCY

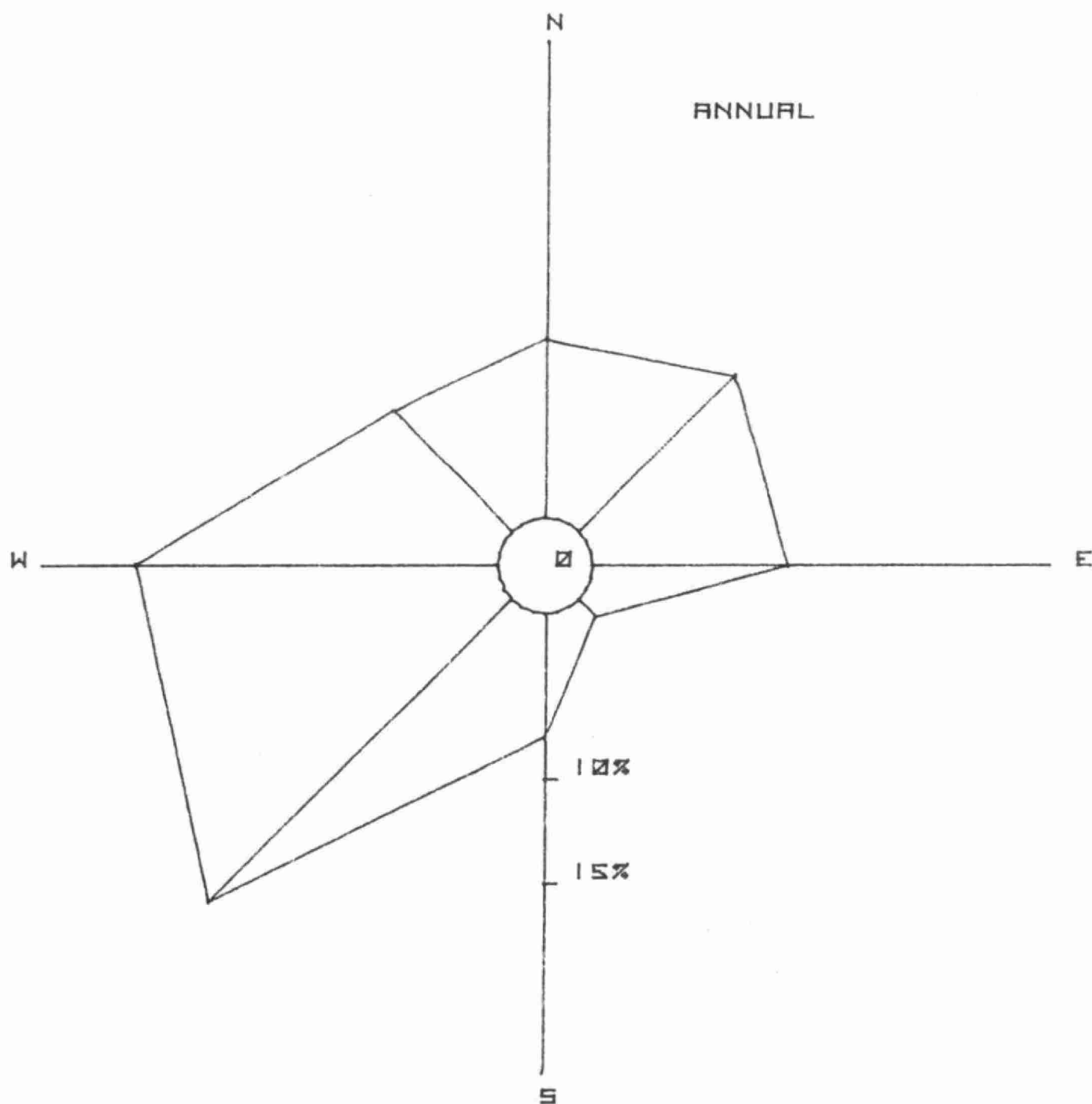
N	NE	E	SE	S	SW	W	NW	CALM
8	14	8	2	5	35	18	8	1



STATION INFORMATION
 LOCATED
 AT BRAMPTON/WOODWARD
 HAMILTON
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

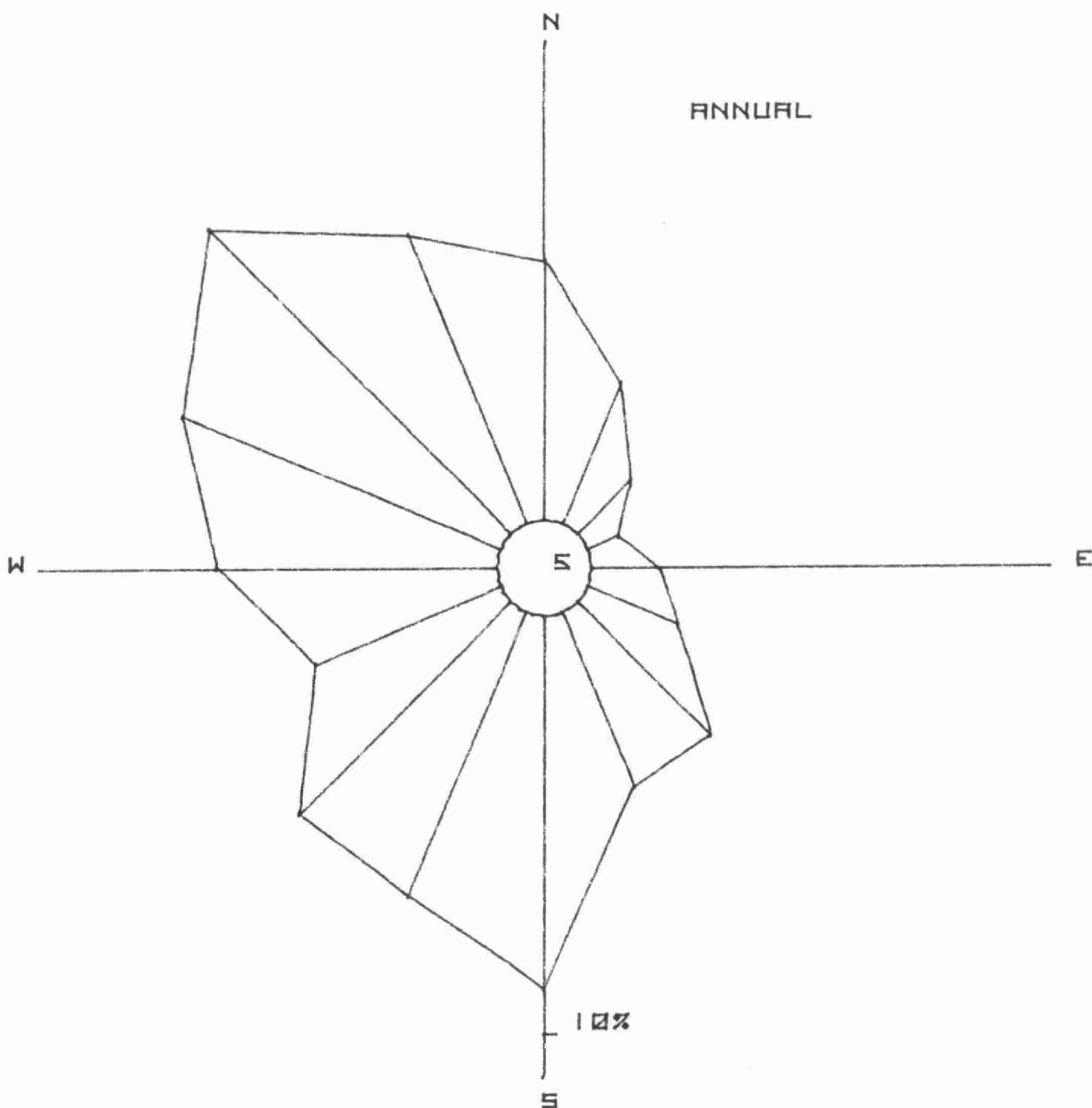
N	NE	E	SE	S	SW	W	NW	CALM
10	12	13	4	8	25	18	8	0



STATION INFORMATION
 LOCATED
 AT BRAMPTON/WOODWARD
 HAMILTON
 HEIGHT 61.6M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
11	13	12	3	8	23	22	10	0

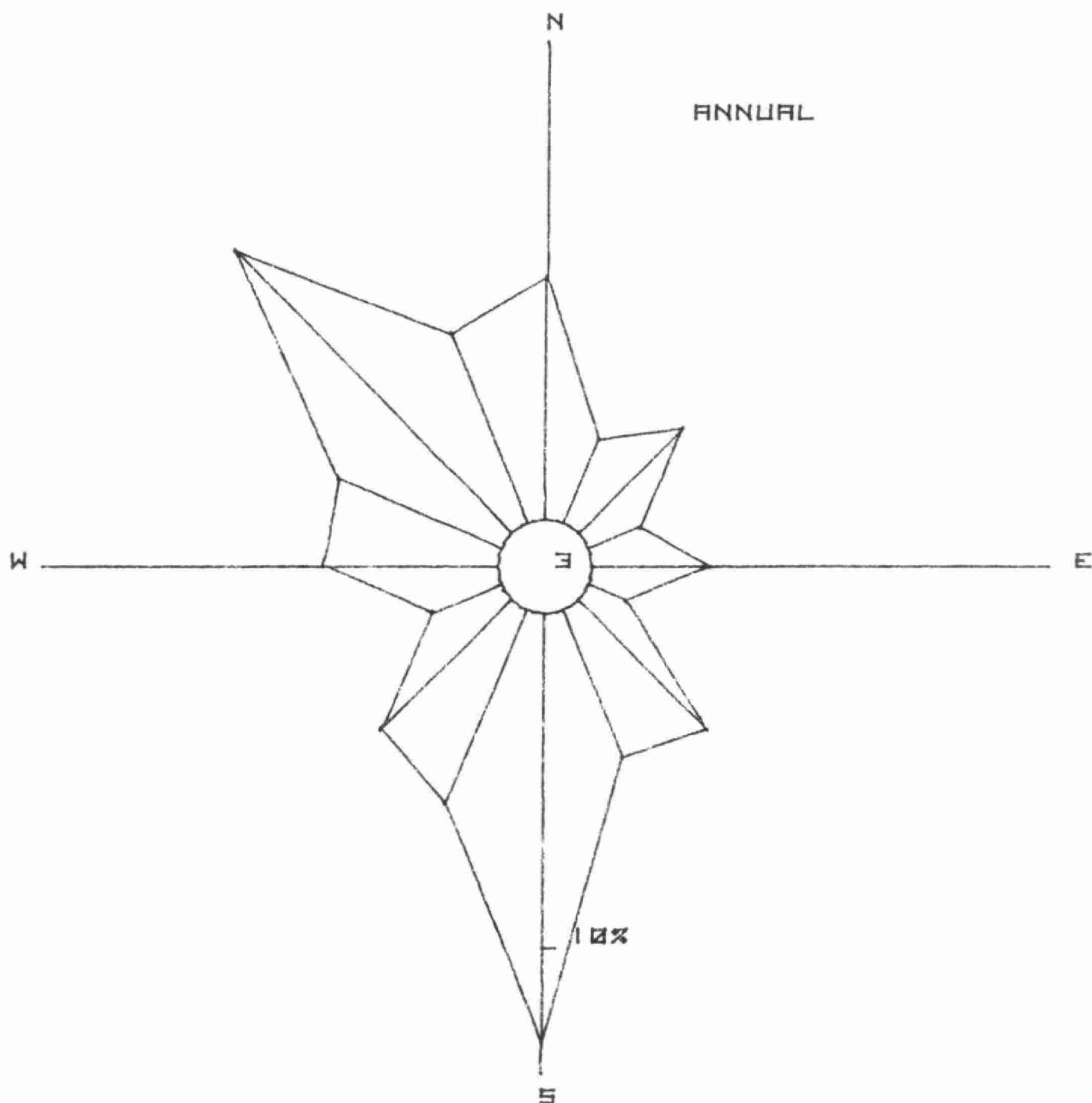


STATION INFORMATION

LOCATED AT THE AIRPORT WITH THE
 UZA WIND DETECTORS ON TOP OF THE
 BEACON TOWER, AREA FLAT WOODED.
 HEIGHT 19.1M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
7	4	3	2	2	3	5	5	8	8	8	5	7	8	10	8	5

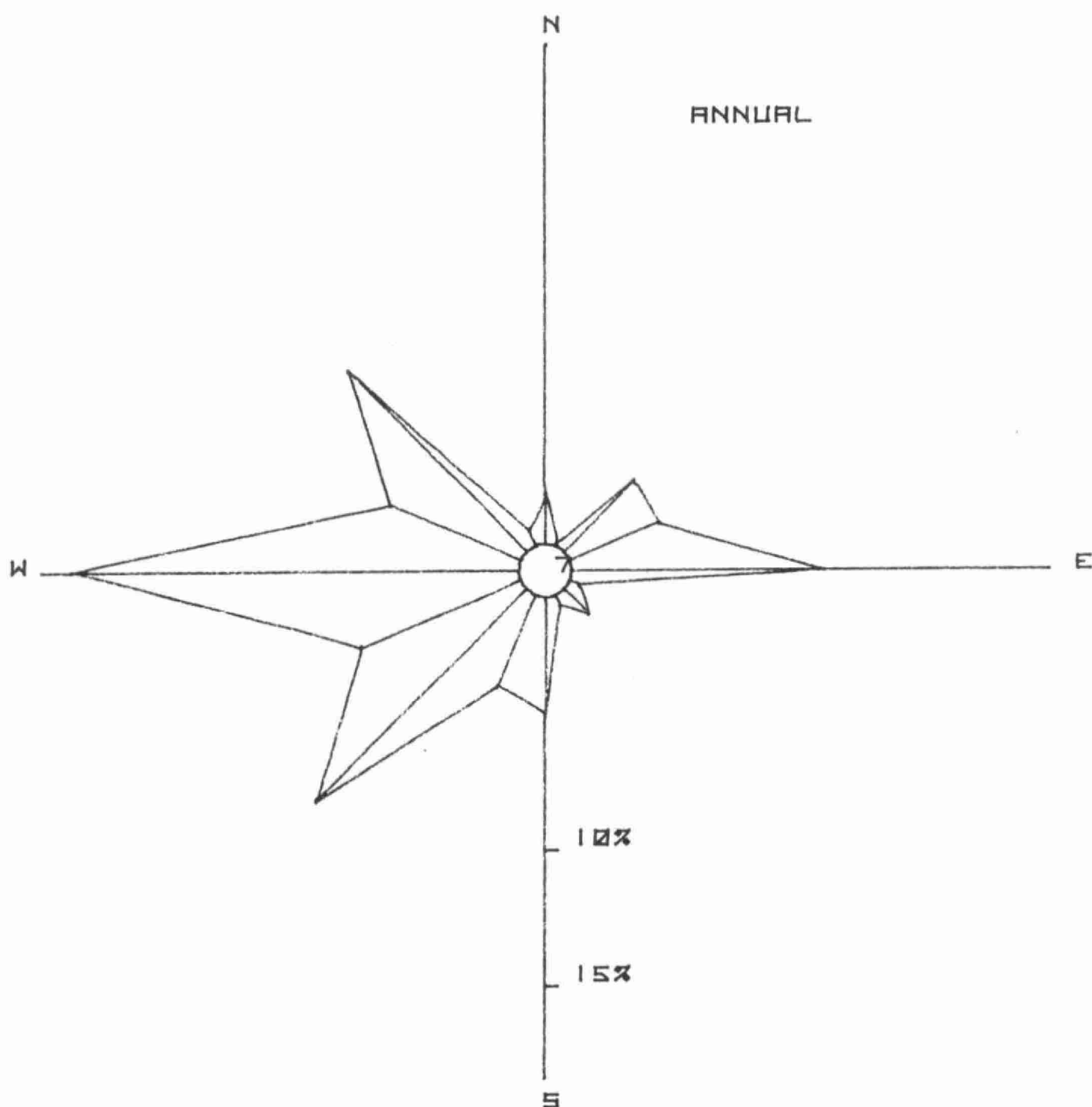


STATION INFORMATION

LOCATED 8KM E OF TOWN IN ROLLING
BUSH COUNTRY. NW OF AIRPORT IS A RIDGE
EXTENDING 31M ABOVE FIELD LEVEL.
HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
4	5	3	4	2	6	5	13	7	6	3	6	6	12	7	3	

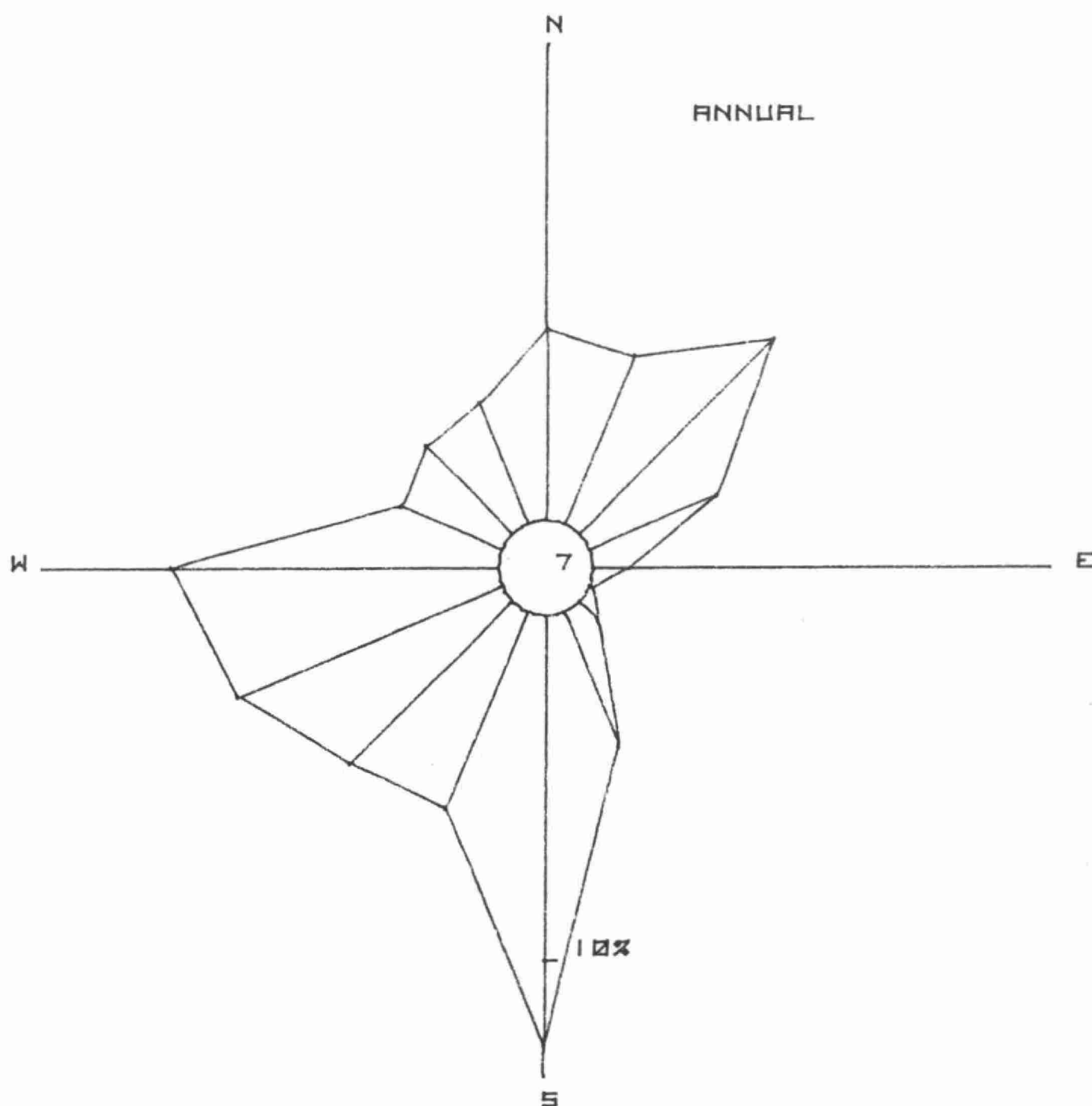


STATION INFORMATION

LOCATED AT AIRADIO SITE NE 2.4KM OF TOWN ON
S SIDE HWY 60 NEAR GOLDEN LAKE, AREA AROUND
STN FIELD IS WOODED. HIGH TREES AFFECT N
WINDS. HEIGHT 17.5M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
3	1	5	4	10	1	2	1	5	5	12	7	17	6	10	2	7

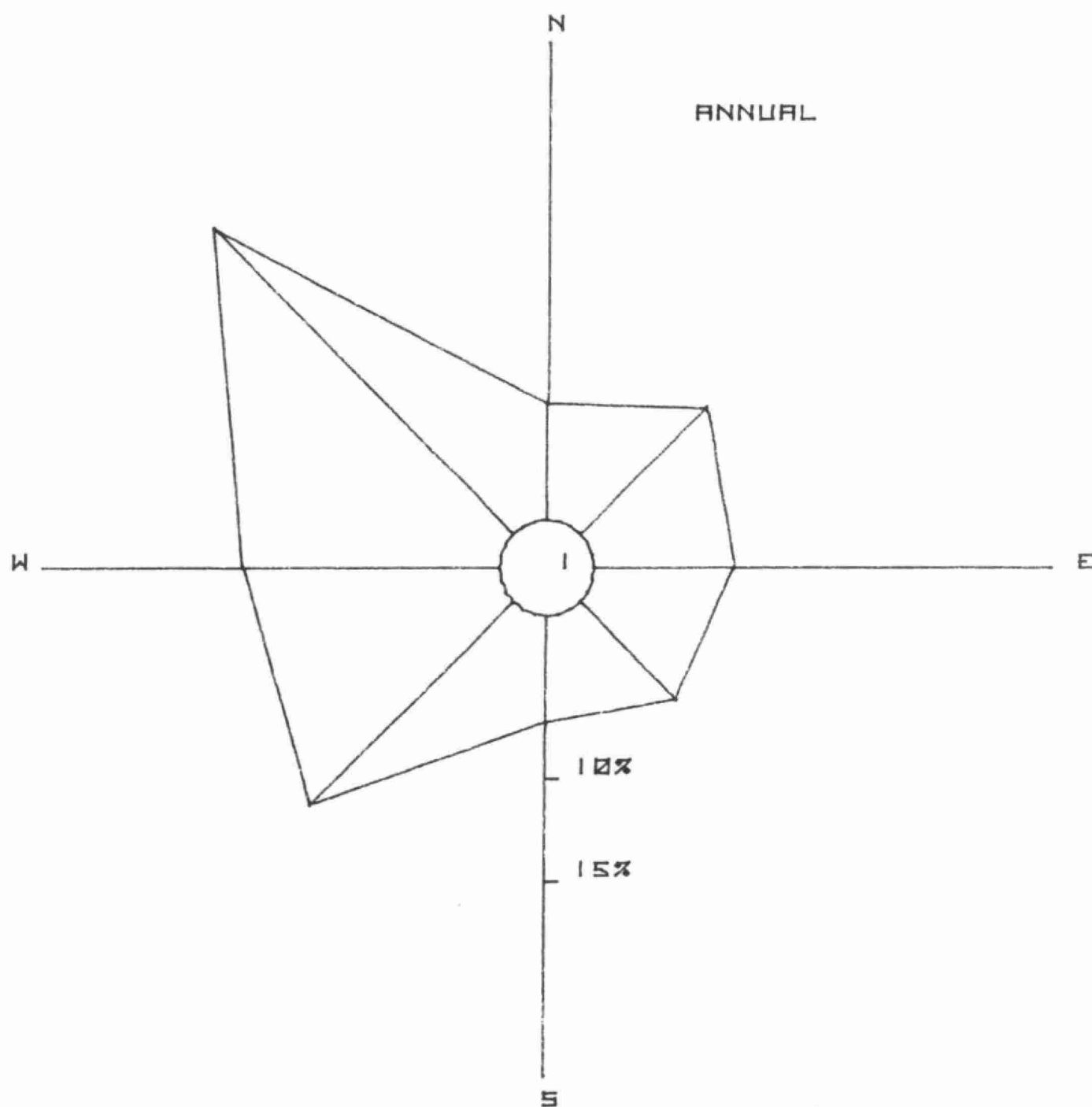


STATION INFORMATION

LOCATED N SHORE OF LAKE ONTARIO 6.4KM E OF
KINGSTON. TO THE N AND W IS PARTLY WOODED
FARMLAND. THE UZA TOWER IS WELL EXPOSED.
HEIGHT 3.8M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
0	0	0	5	2	1	2	5	12	7	7	0	10	4	4	5	7

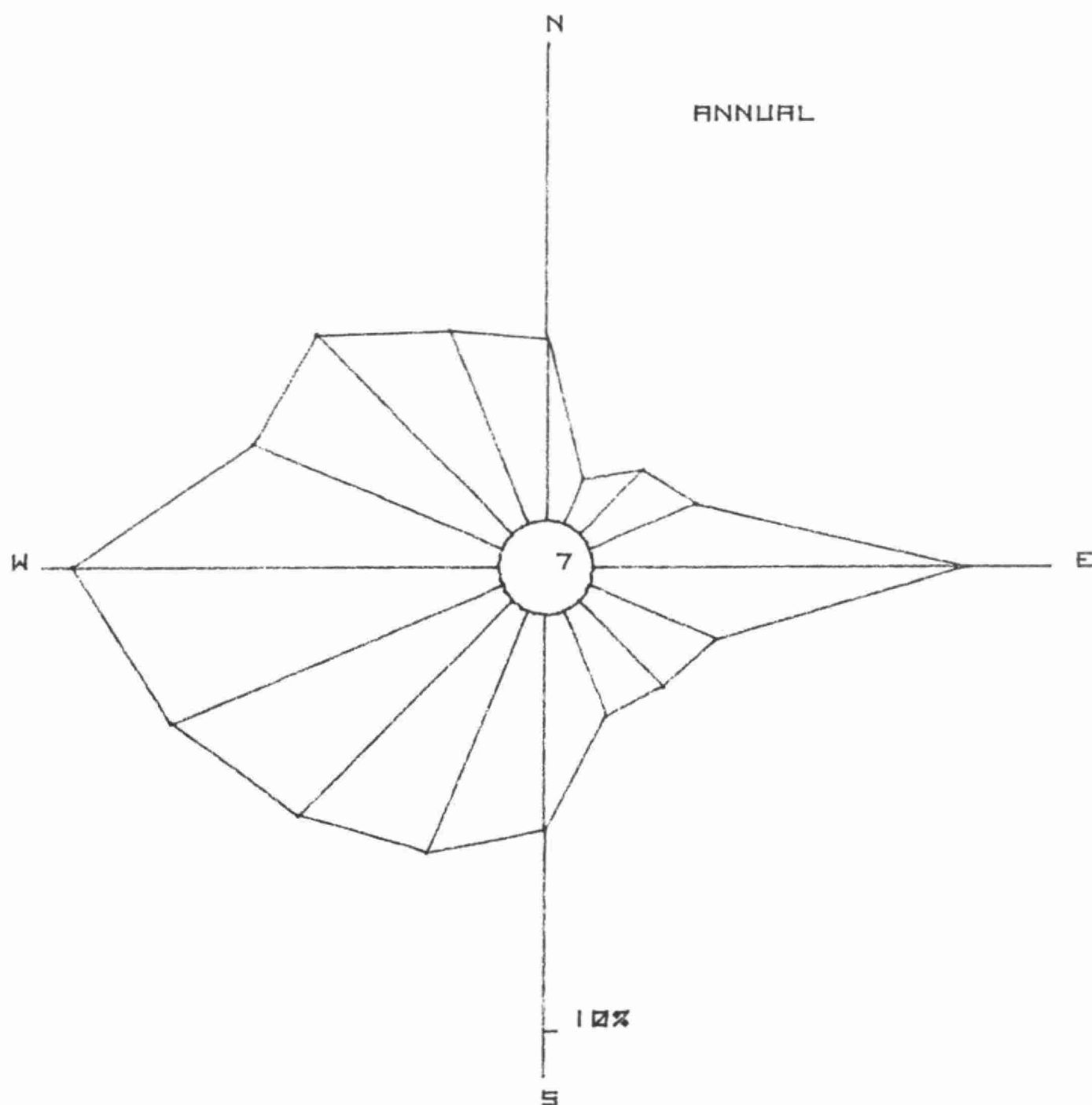


STATION INFORMATION

LOCATED IN SLIGHTLY ROLLING WOODED COUNTRY
 INTERSPACED WITH NUMEROUS LAKES. THERE ARE
 NO OBSTRUCTIONS IN ANY DIRECTION.
 HEIGHT 13.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	11	8	8	7	16	15	23	1

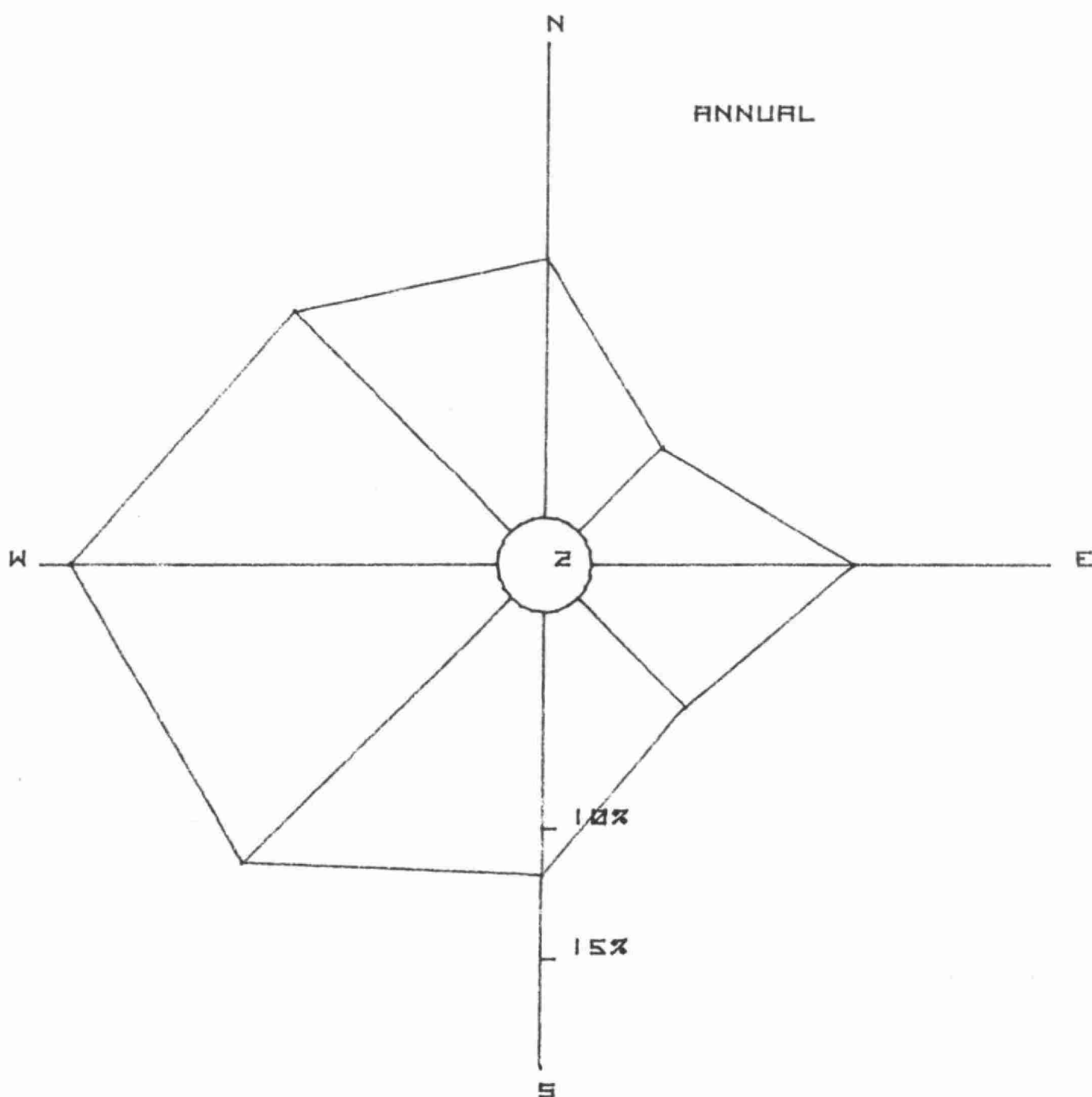


STATION INFORMATION

LOCATED 9.6KM E OF CITY CENTRE AREA IS
 FLAT WITH SLIGHT ROLL IN NW SECTION OF
 RUNWAY COMPLEX
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
5	2	3	4	5	4	4	3	5	7	8	8	10	7	7	6	7

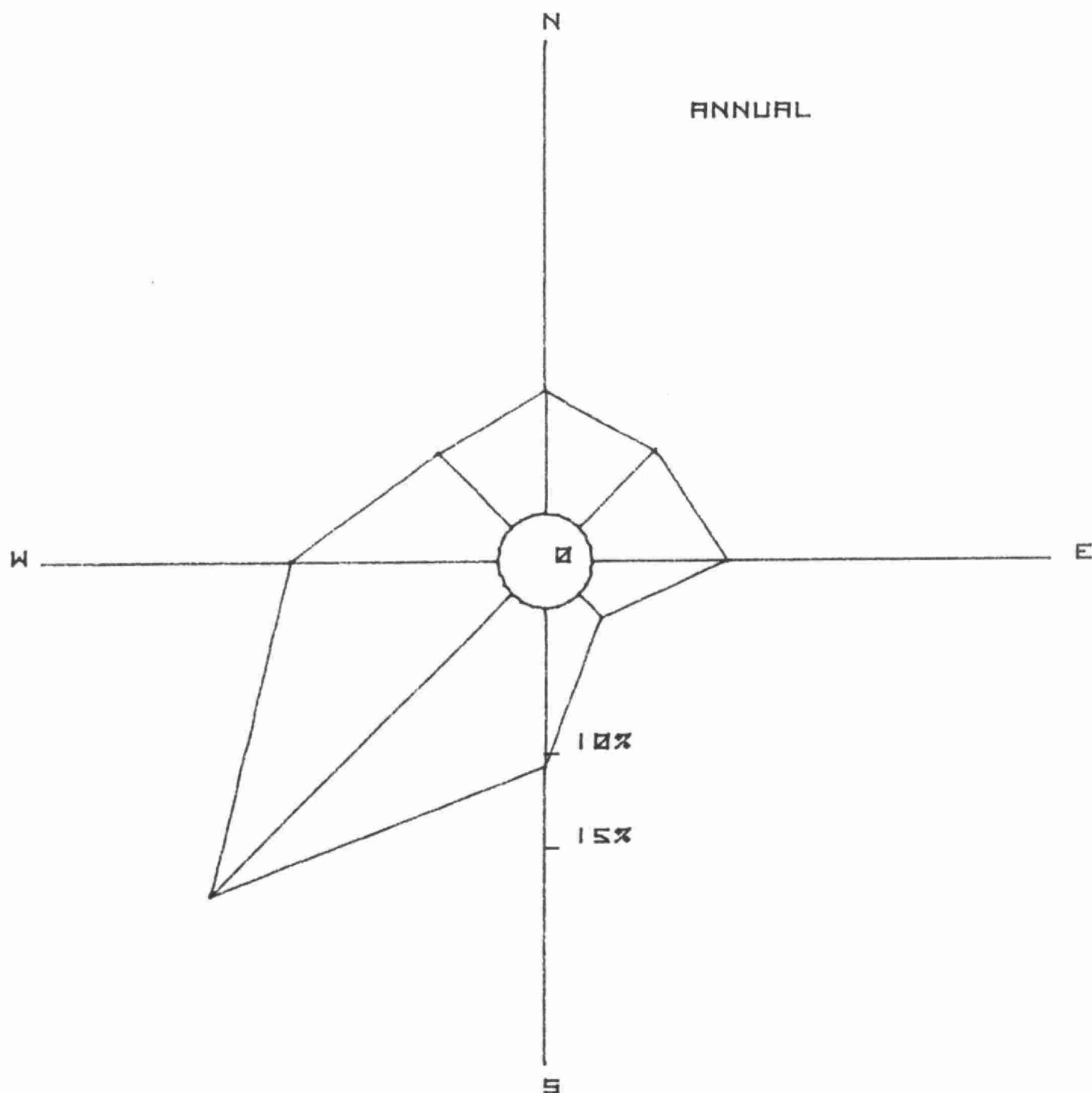


STATION INFORMATION

LOCATED WHEN OPERATED
 WAS 8KM SW OF LONDON. THE COUNTRY
 IS VERY FLAT WITH A SLIGHT SLOPE TO THE S.
 HEIGHT 17.8M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
12	8	12	8	12	18	18	14	2

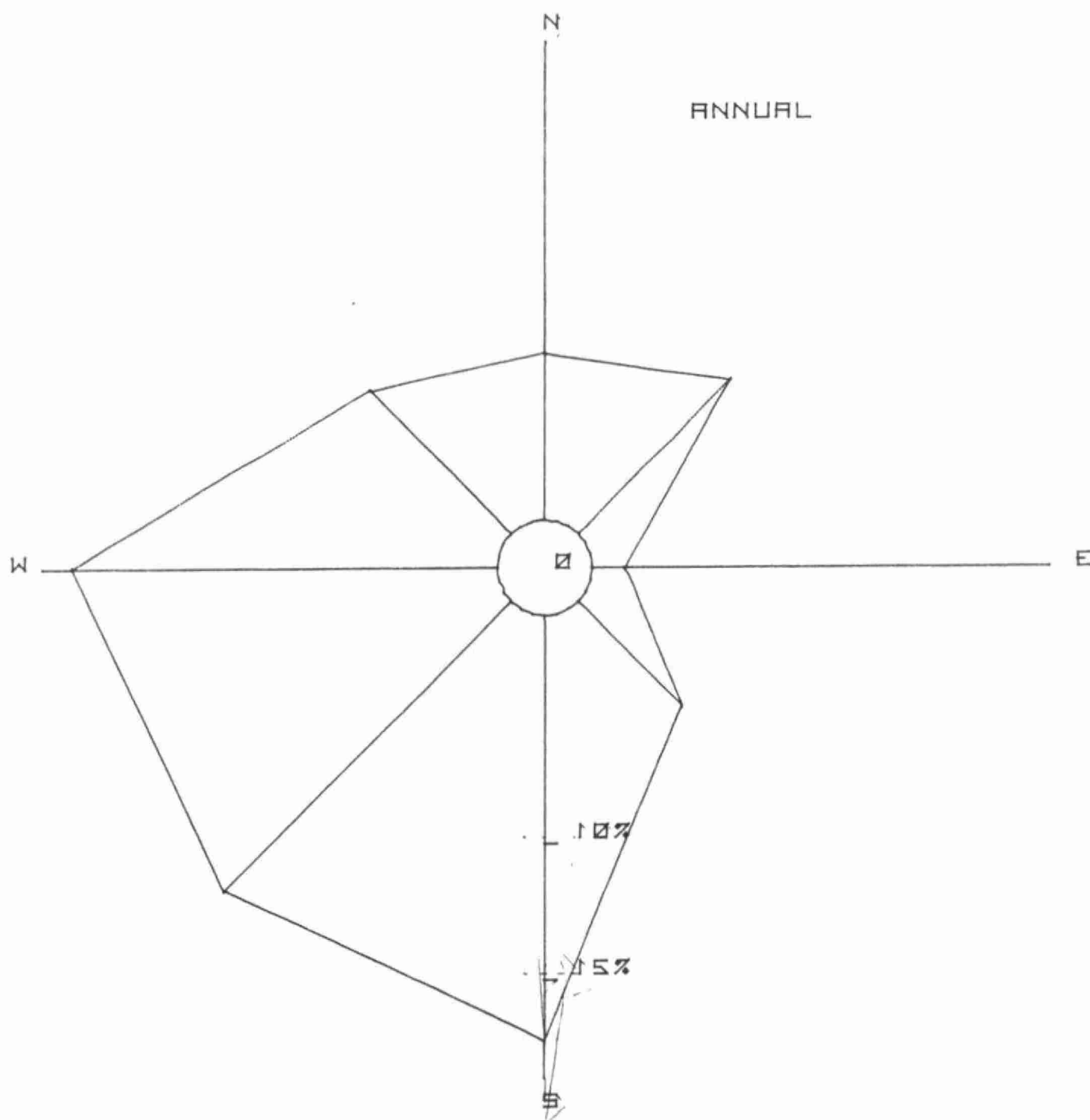


STATION INFORMATION

LOCATED E TIP OF LONG ISLAND PENINSULA ON
SAND BAR 32KM LONG 1.6-4.8KM WIDE. SAND
DUNES ALONG S SIDE.
HEIGHT 32.6M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	8	10	4	11	25	14	8	0

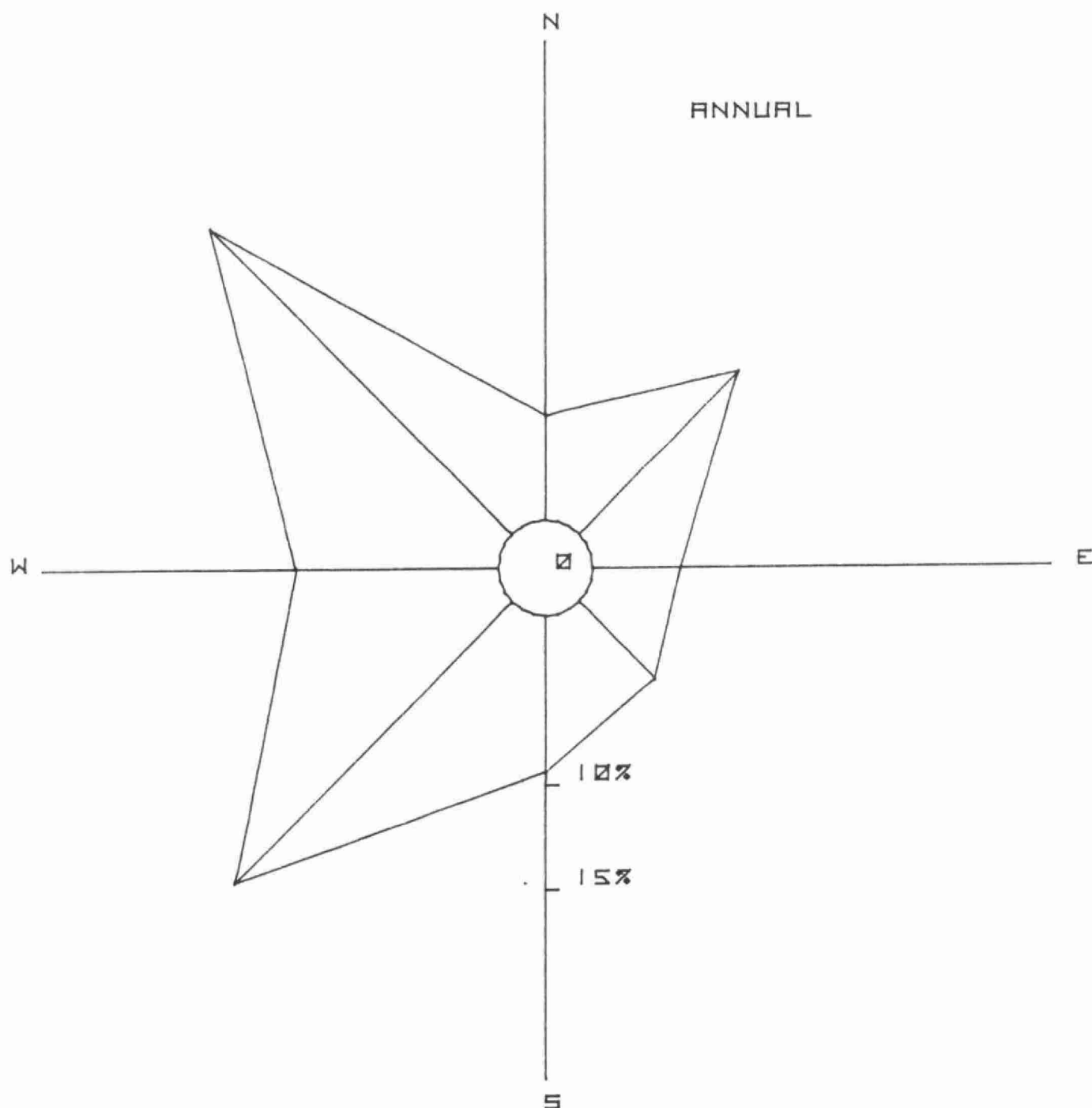


STATION INFORMATION

LOCATED W TIP OF ISLAND 19.2KM E OF
 PRINCE EDWARD PT, ANEMOMETER 150N
 PIPE ATOP LIGHTHOUSE WITH NO OBSTRUCTIONS
 HEIGHT 20.6M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
0	10	3	7	17	17	18	0	0

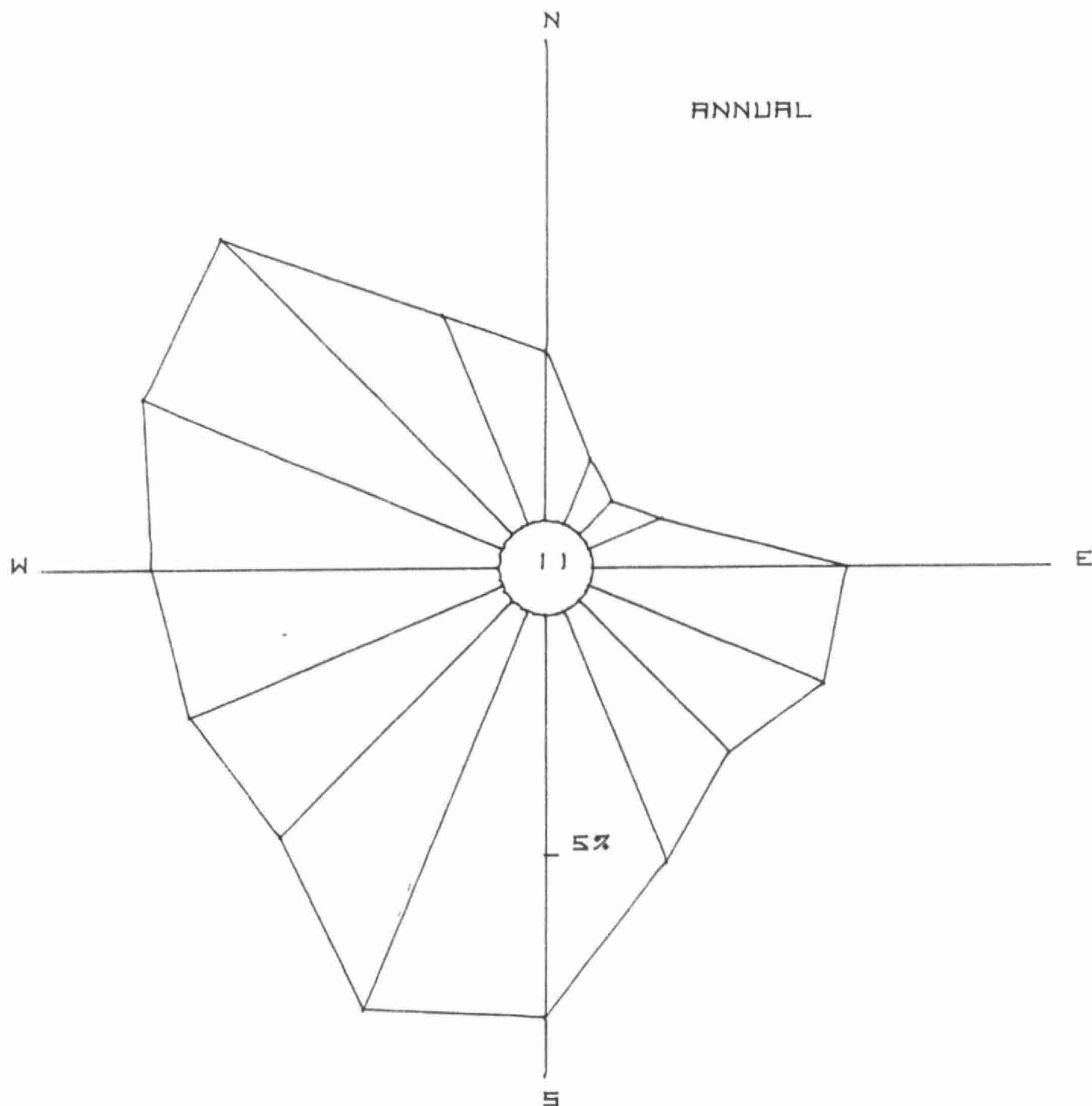


STATION INFORMATION

LOCATED NW BANK MOOSE RIVER 16KM SW JAMES
BAY, FLAT HEAVILY WOODED AREA, TOWER 92M W
OF OPERATIONS BLDG.
HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
7	13	6	7	10	21	12	23	0

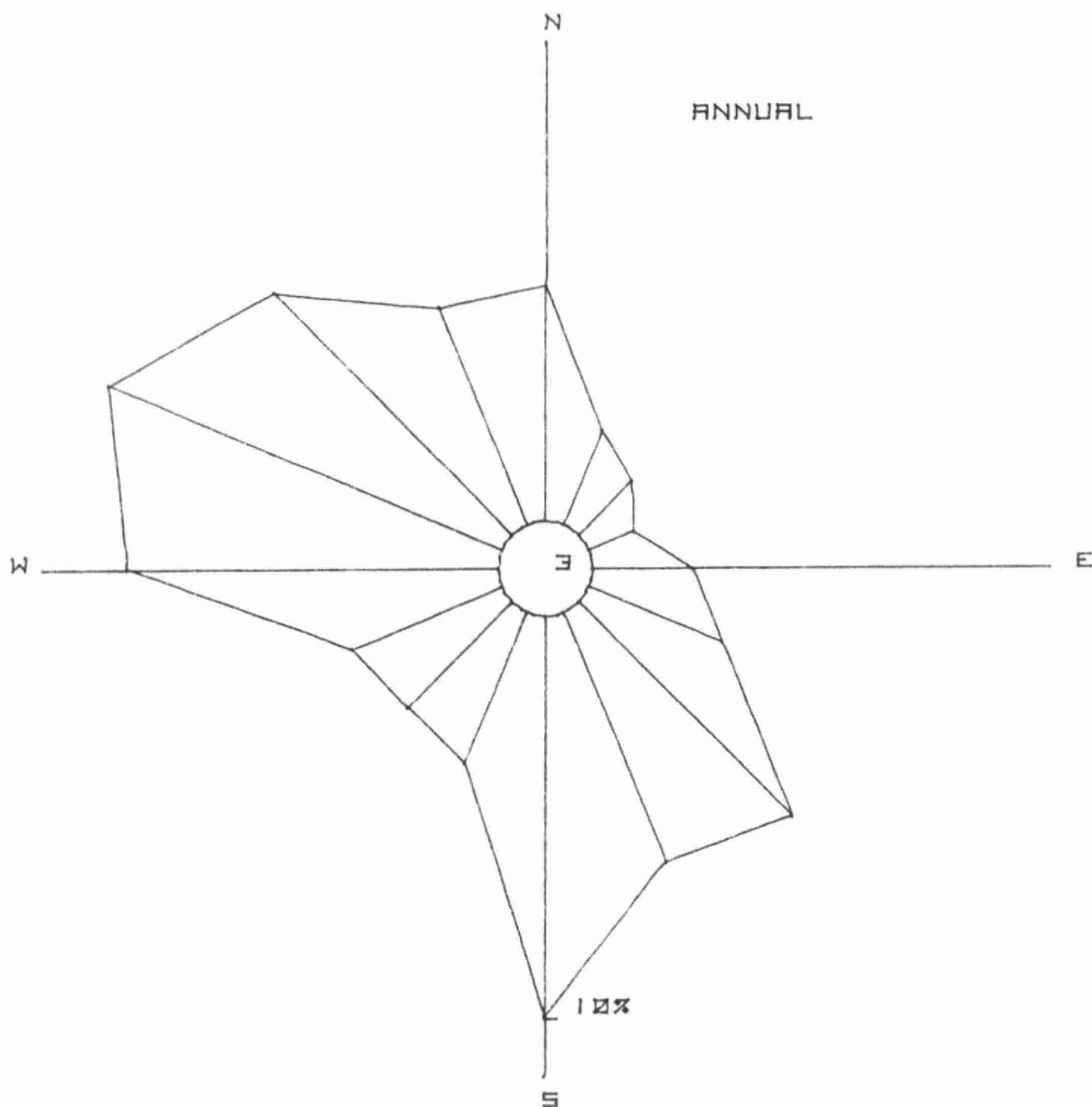


STATION INFORMATION

LOCATED E SIDE HWY 6 ON N EDGE O TOWN N OF
CN TRACKS, RISING SLIGHTLY TO THE NE AND FLA
NE THROUGH SE. A 2 STORY BLDG 23.1M TO NW
COULD CAUSE TURBLANCE. HEIGHT 10.8M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
4	2	2	2	5	5	5	6	8	8	7	7	7	8	8	5	11



STATION INFORMATION

LOCATED

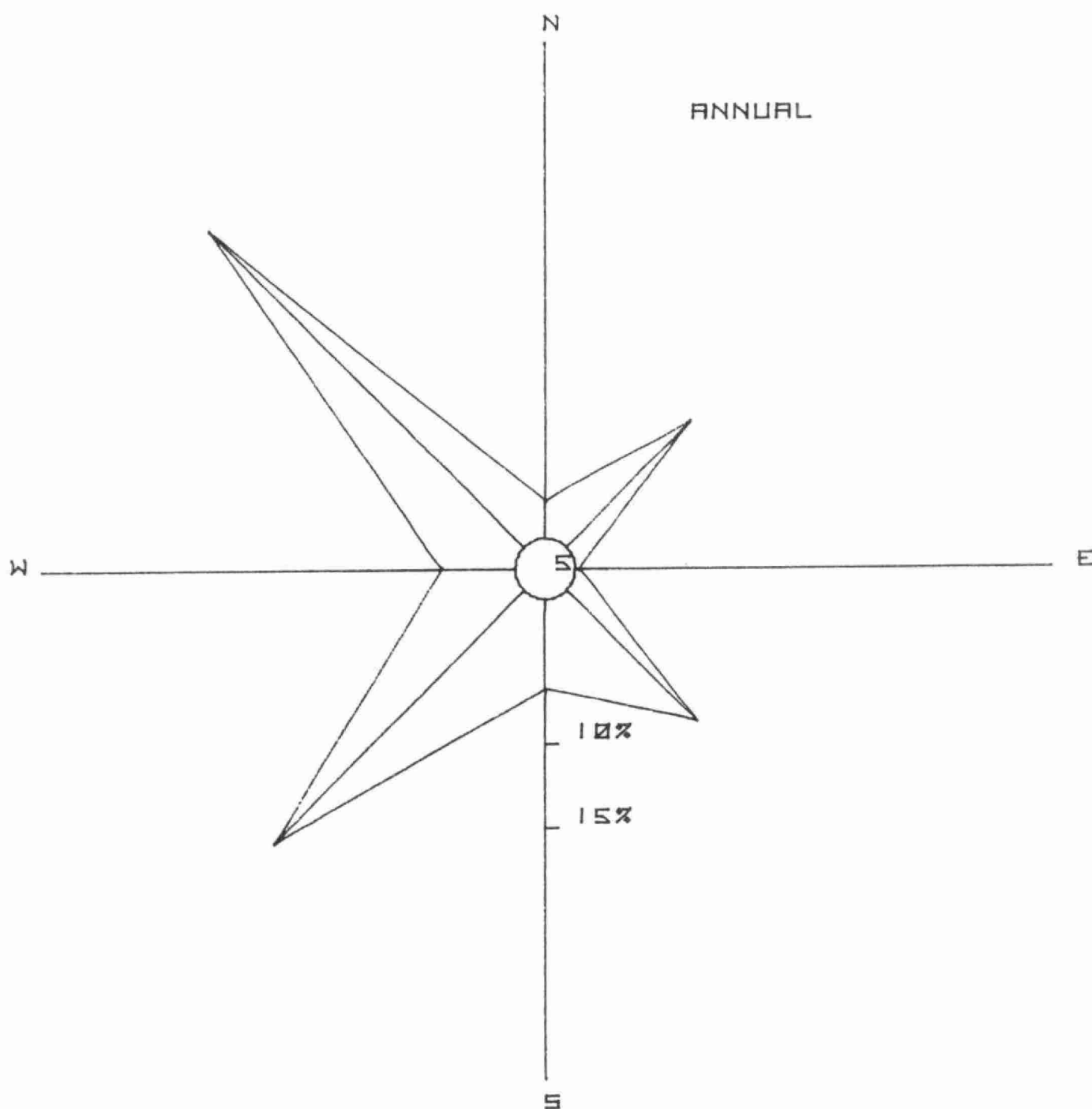
8KM NE OF GRAVENHURST ON HWY 11 IN

ROLLING WOODED AREA

HEIGHT 27.1M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
6	3	3	2	3	4	8	7	10	5	4	5	8	11	8	6	3

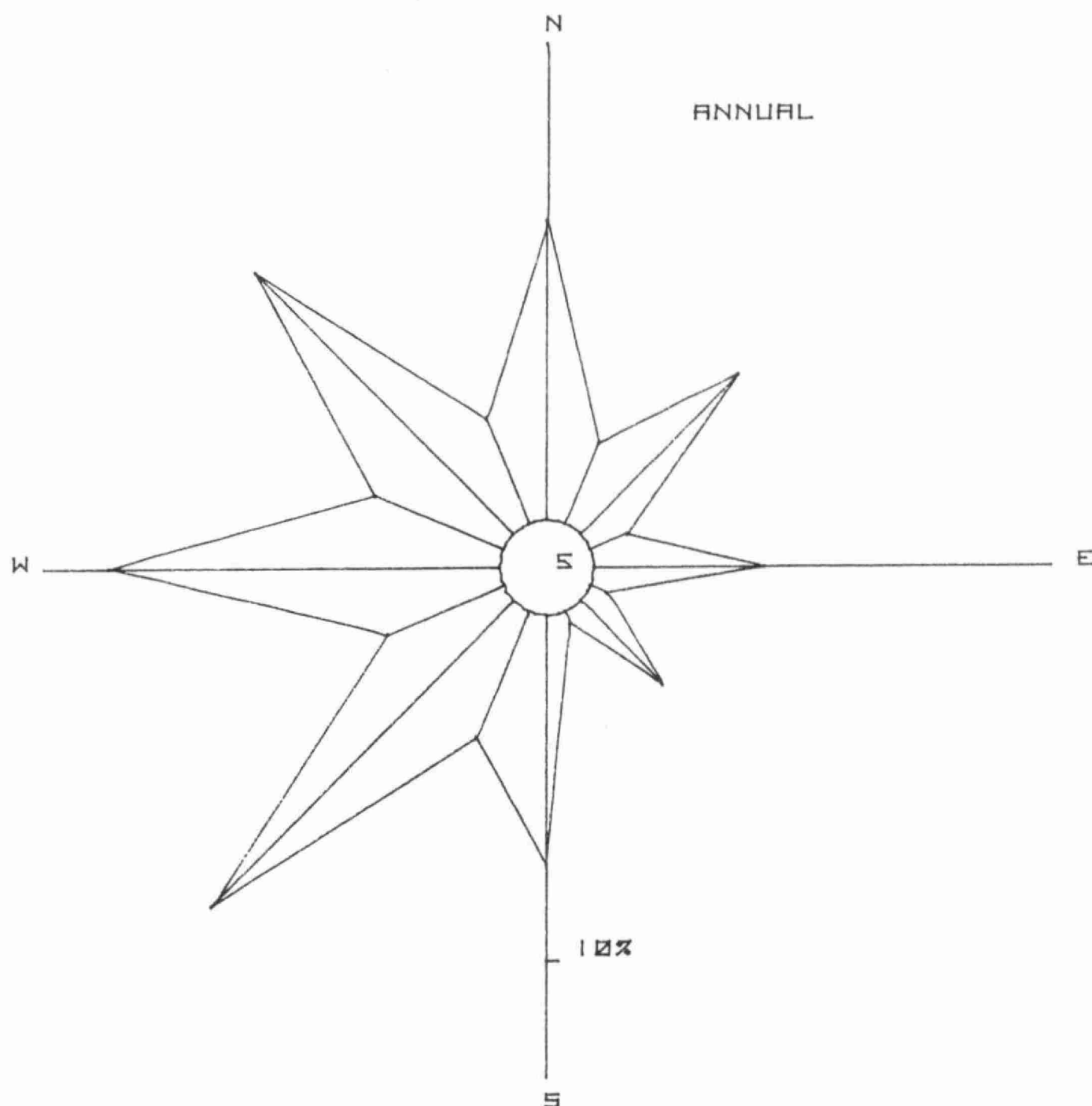


STATION INFORMATION

LOCATED IN HEAVILY WOODED AREA, WOODS IN ALL DIRECTIONS. CONSIDERABLE SHELTERING TO E-S AND SW. GOOD SWEEP FROM W AND NW
HEIGHT 13.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
1	12	2	13	7	23	6	28	5

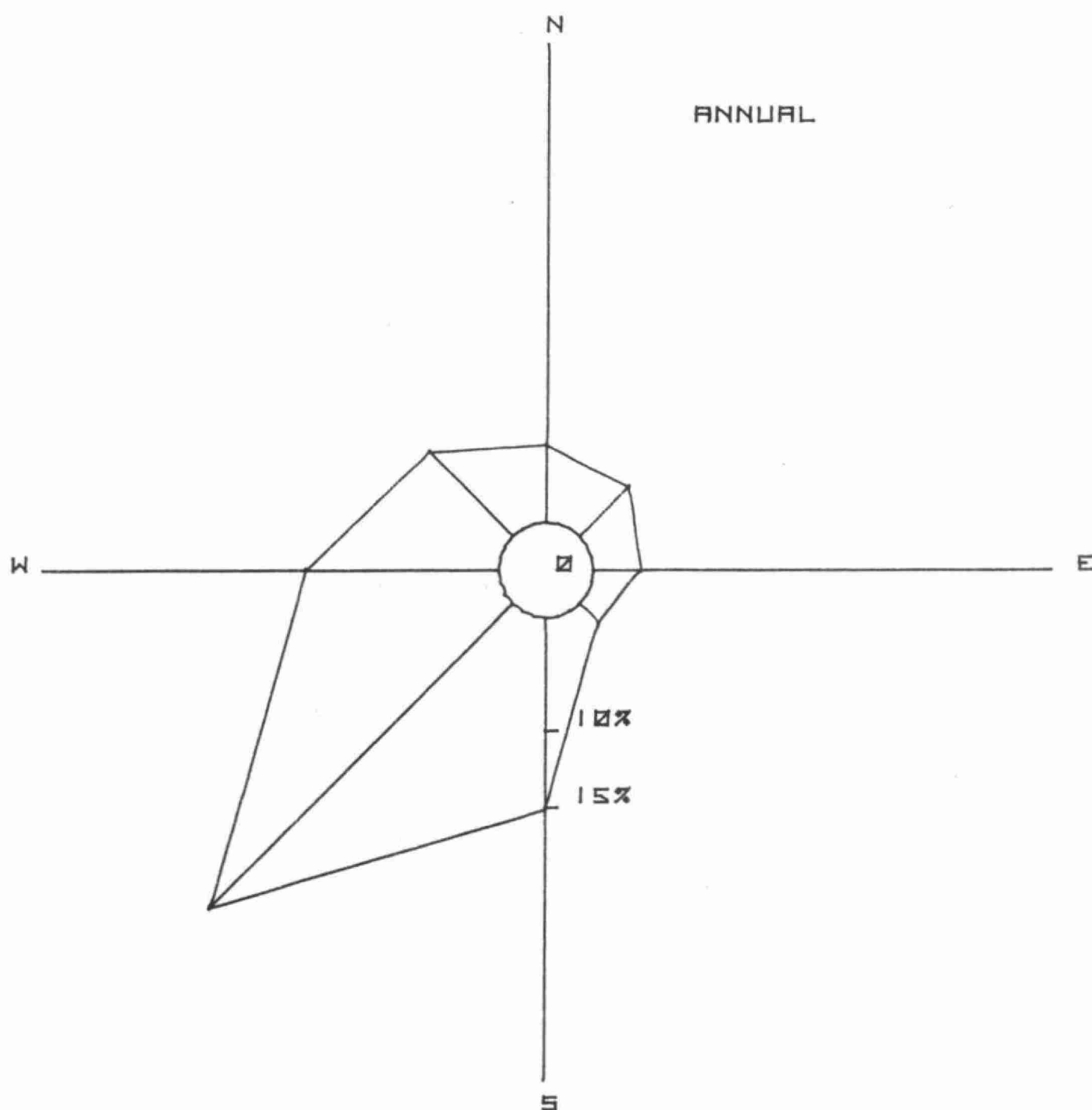


STATION INFORMATION

LOCATED AT AIRPORT IN FOREST. COUNTRY HILLY
 WITH ODD FLAT AREA. NO OBSTRUCTIONS EXCEPT
 N WHICH HAS 9.2-13.8M HIGH TREES
 HEIGHT 16M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
8	3	7	2	6	2	4	2	8	5	12	4	11	5	11	4	5



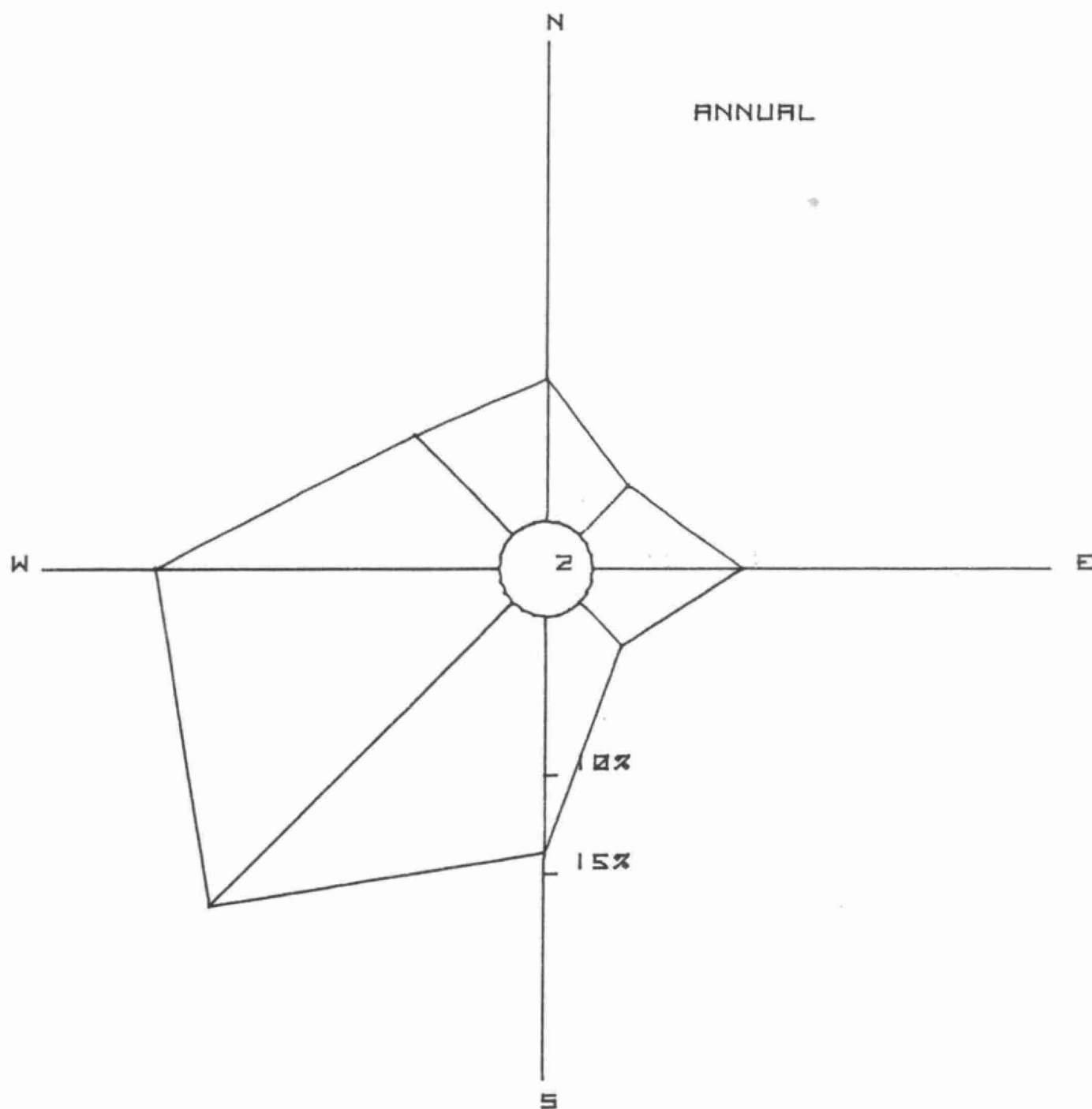
STATION INFORMATION

LOCATED
 ON ROOF OF ST FRANCIS SCHOOL AT
 VICTORIA/LEADER STREETS
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	8	8	5	18	31	18	11	0

NIAGARA FALLS (GRASS ISLAND) (AES) 1965-1972

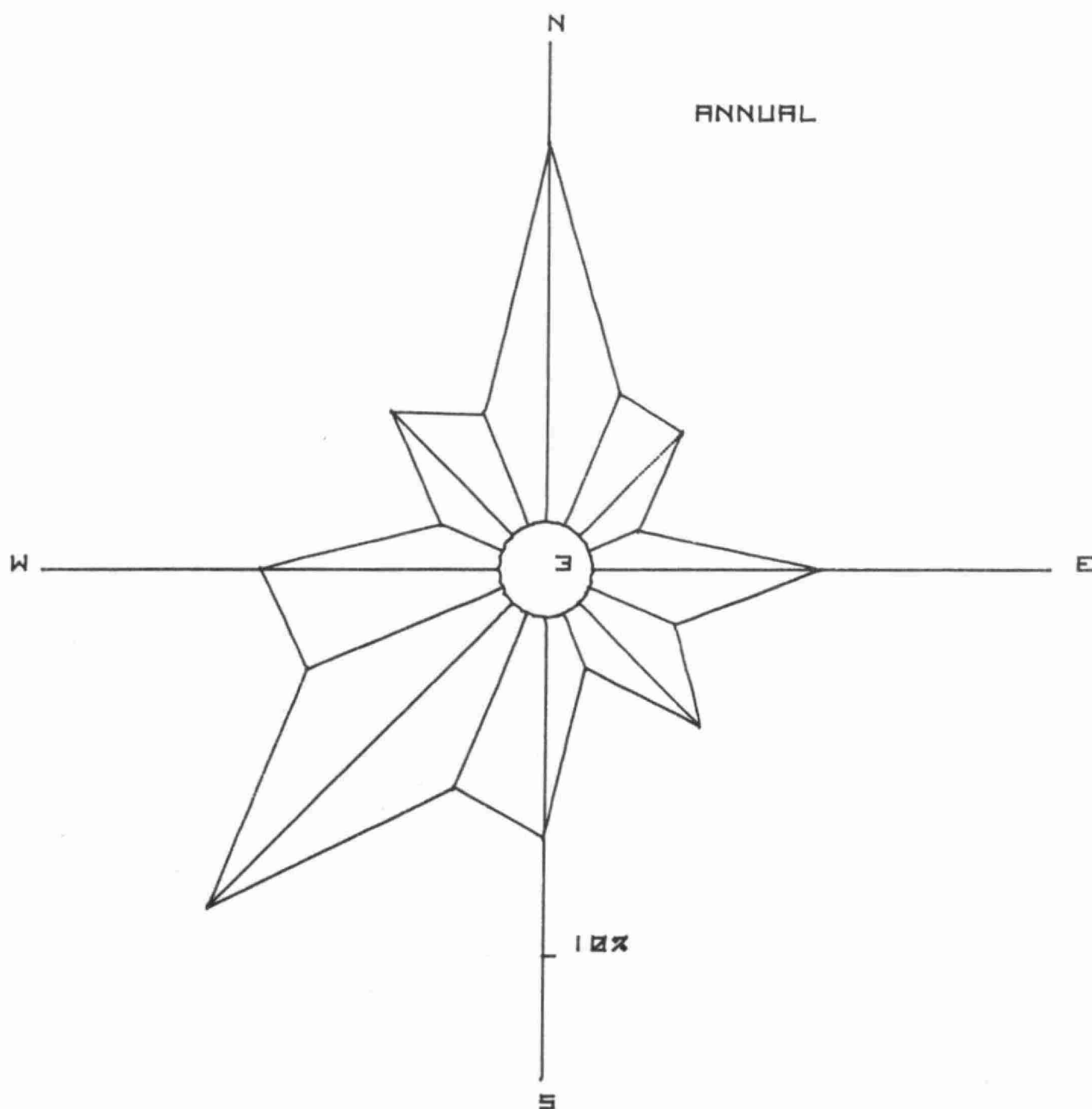


STATION INFORMATION

LOCATED
ON GRASS ISLAND HYDRO DAM IN
NIAGARA RIVER
HEIGHT

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
0	0	10	5	14	24	20	0	2

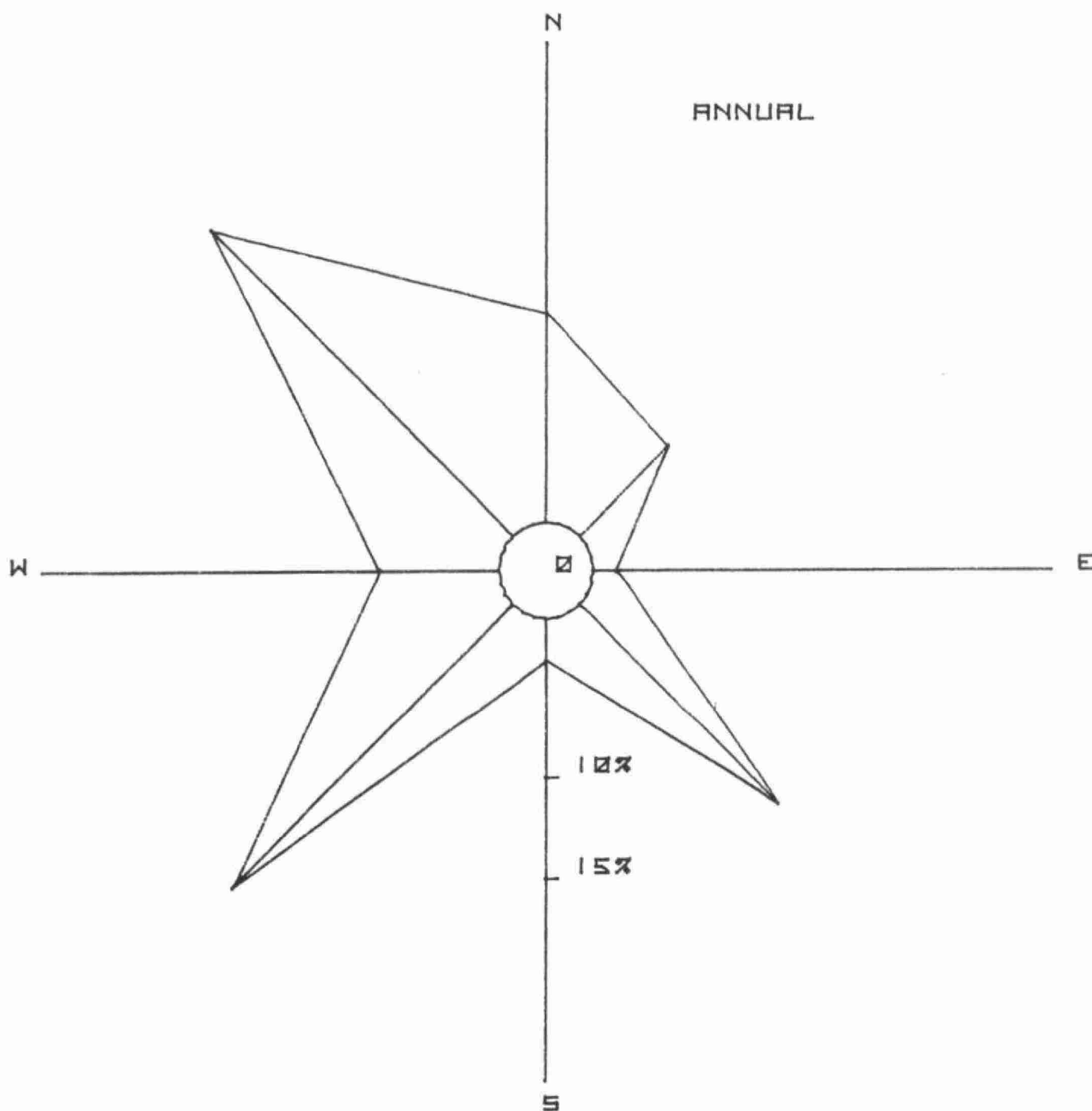


STATION INFORMATION

LOCATED ON AIRFIELD, N OF CITY IN SLIGHTLY
 HILLY COUNTRY WITH AN ESCARPMENT IN A E-W
 DIRECTION SOUTH OF AIRPORT. NO OBSTRUCTIONS
 HEIGHT 13.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
11	5	5	3	7	4	6	3	7	6	13	7	8	3	6	4	3

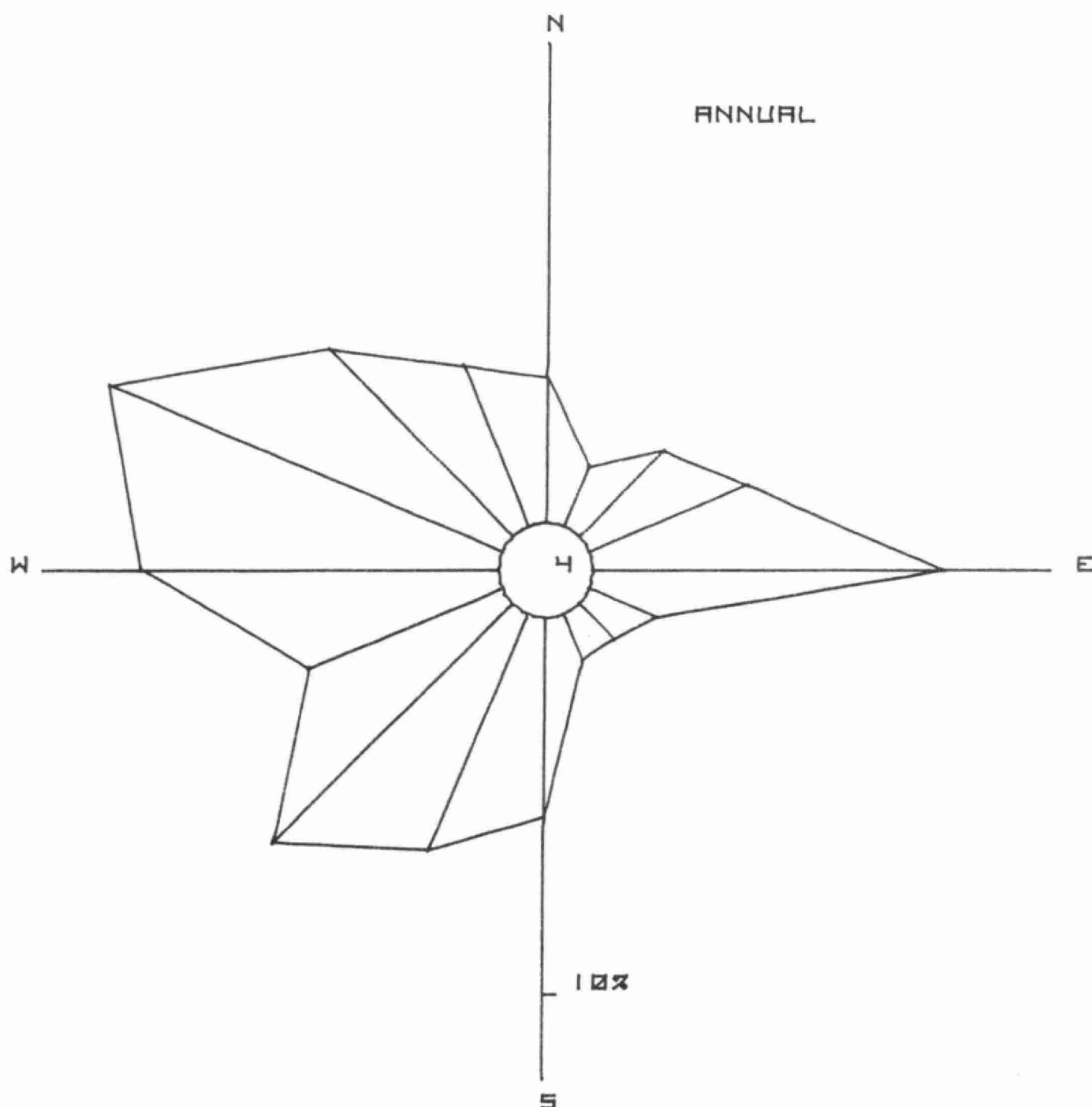


STATION INFORMATION

LOCATED IN A DEPRESSION ON THE SW-NE
 RUNNING HEIGHT OF LAND SEPARATING LAKE
 ONTARIO AND GEORGIAN BAY DRAINAGE AREA
 HEIGHT 24.6M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
13	8	3	16	17	22	8	24	0

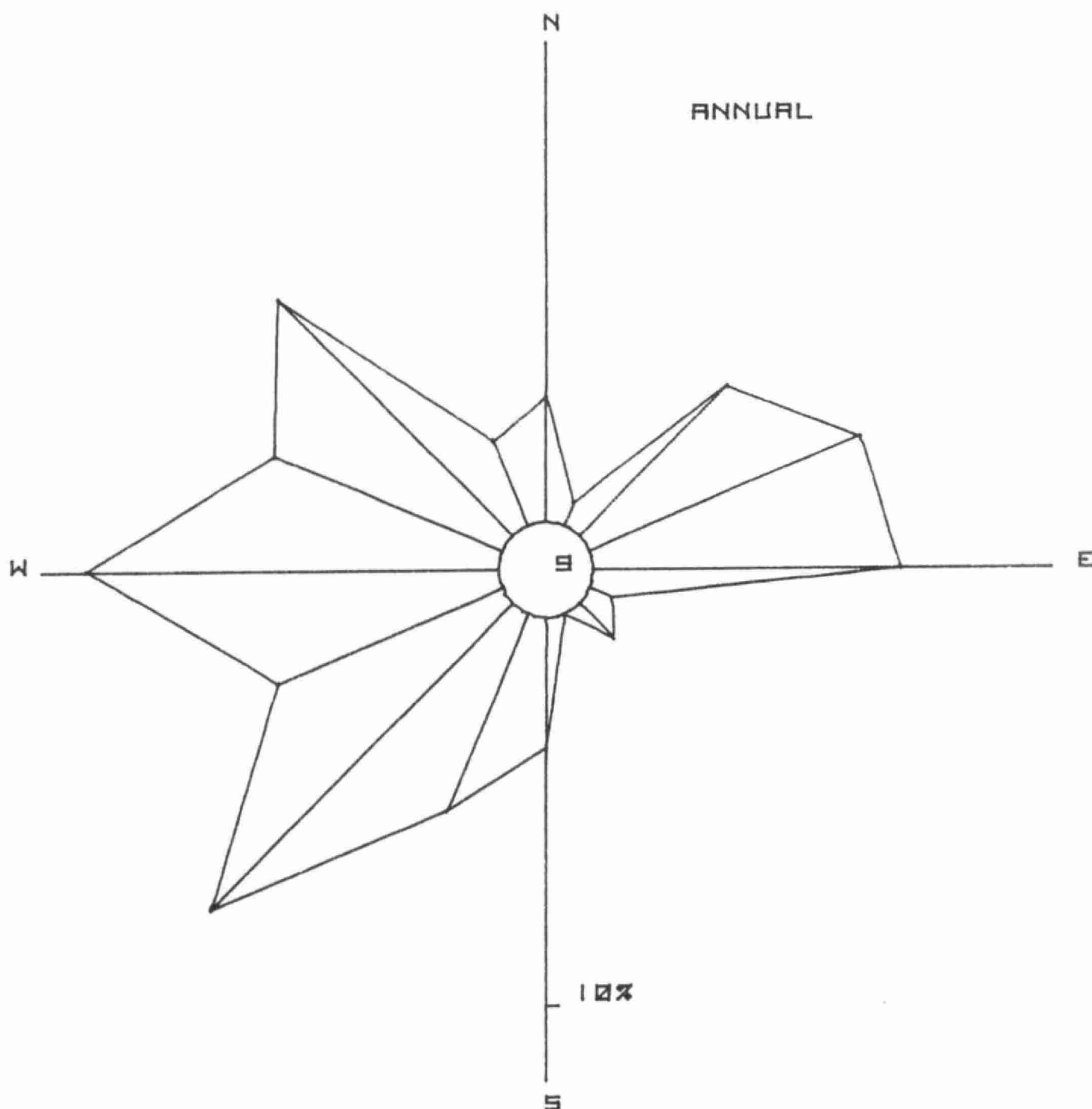


STATION INFORMATION

LOCATED AT THE AIRPORT
 SE OF CITY IN SLIGHTLY ROLLING AREA
 APPROX 25.6KM NW TO GATINEAU HILLS
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
5	3	4	5	10	3	2	2	6	7	9	6	10	11	7	5	4

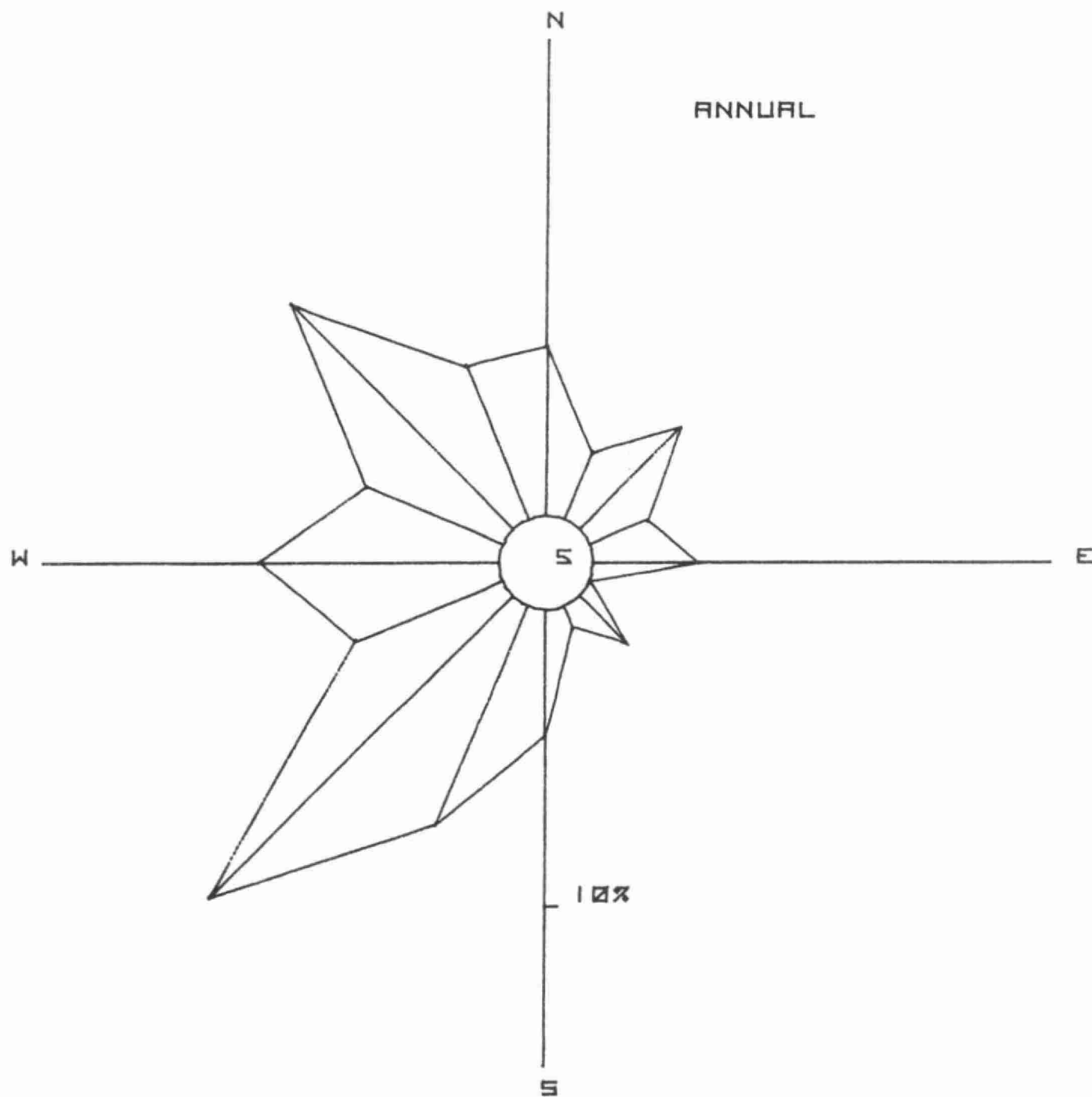


STATION INFORMATION

LOCATED AT AIRPORT E OF OUTSKIRTS,
1.5KM N ON HWY 17 ON S SHORE OTTAWA
RIVER. SURROUNDING COUNTRY IS ROLLING.
HEIGHT 15.4M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
1	2	5	5	5	2	2	1	4	5	11	7	11	7	5	3	5

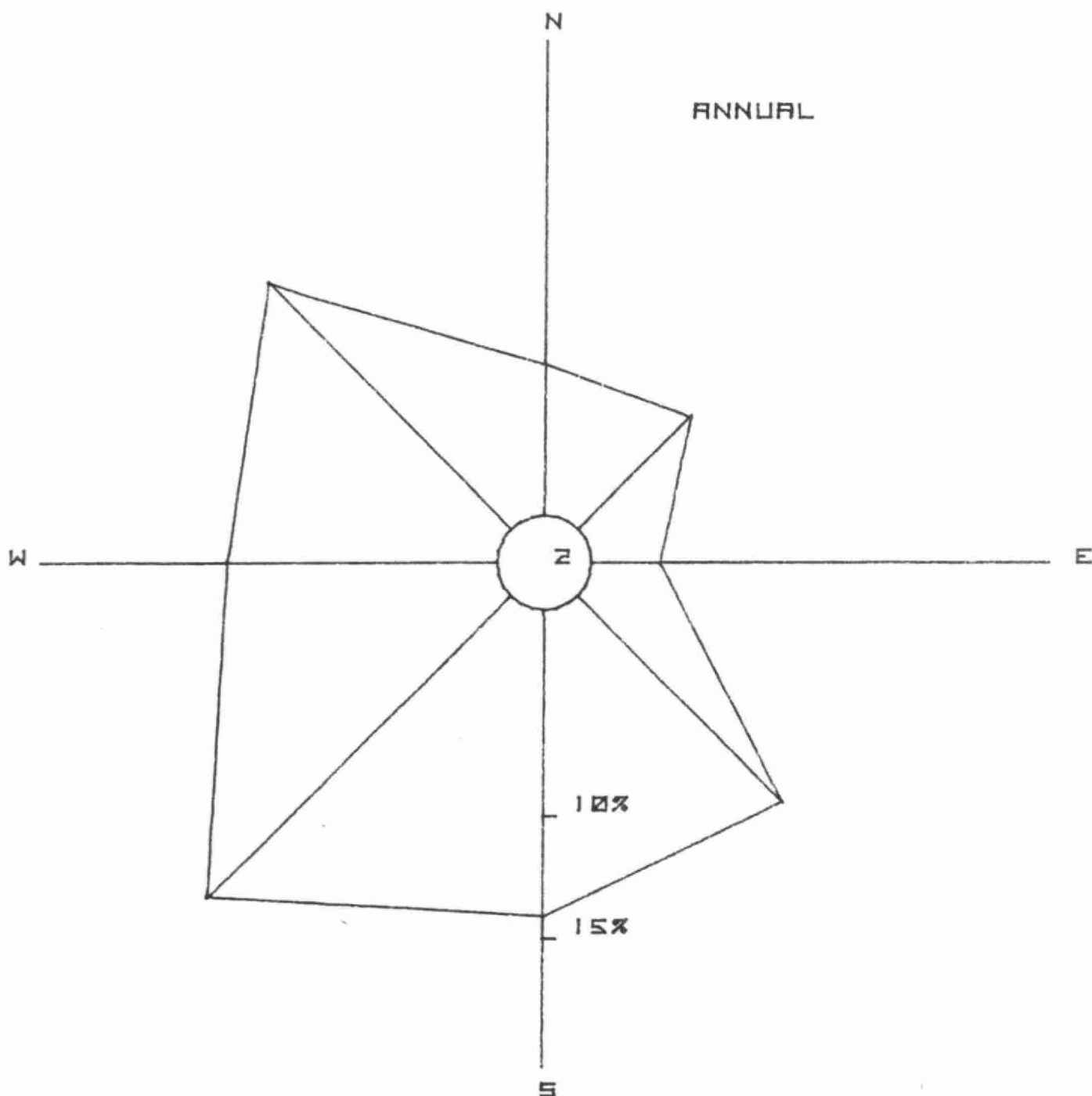


STATION INFORMATION

LOCATED IN FAIRLY FLAT AREA EXCEPT FOR A
NARROW VALLEY 3.2KM E OF PAGWACHURAN RIVER
WHICH FLOWS THROUGH VALLEY. ANEMOMETER IS
BELOW TREES. HEIGHT 13.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
0	0	0	3	4	1	3	2	5	0	14	0	0	0	11	0	5

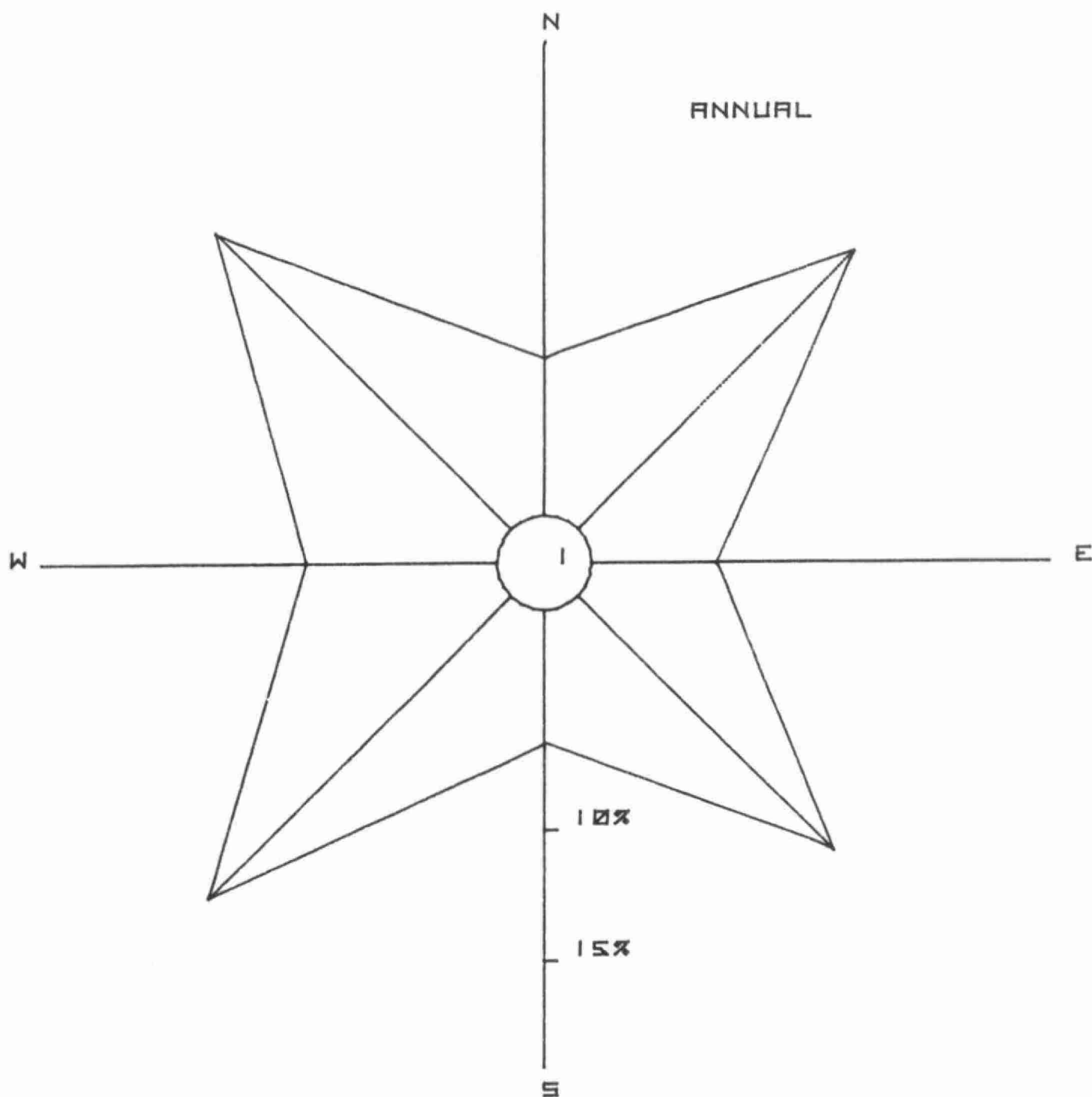


STATION INFORMATION

LOCATED IN ROLLING FARMLAND WITH WOODED
 AREAS. TO N-E ARE CULTIVATED FIELDS.
 ANEMOMETER IN PASTURE 46M SW OF HOUSE.
 OBSTRUCTION FROM E-NE. HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
0	0	0	14	14	10	13	16	2

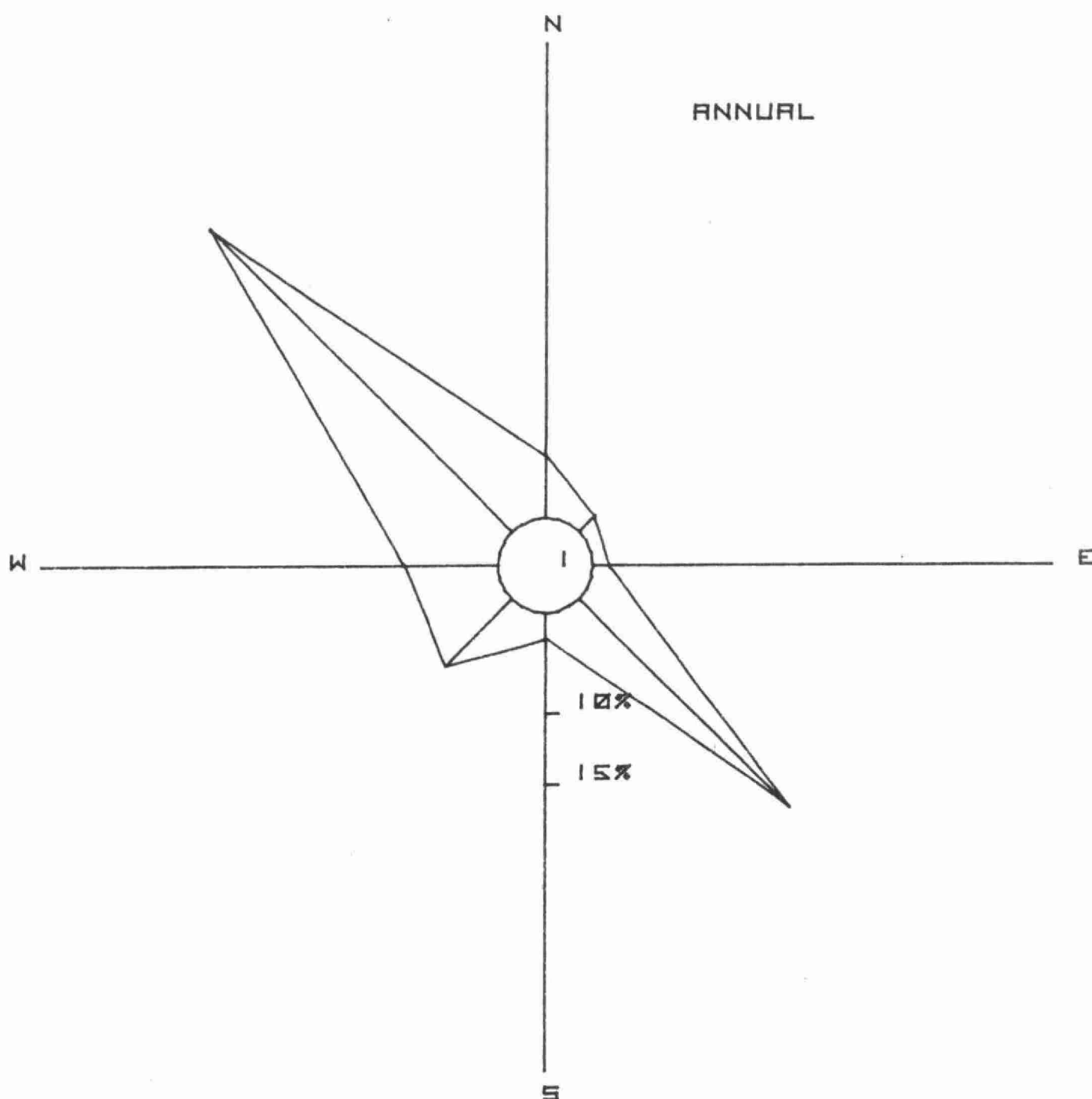


STATION INFORMATION

LOCATED WHEN OPERATED
 WAS IN TOWN. WITH HIGH FORESTED LAND TO THE
 NW. AREA IS HILLY AWAY FROM GEORGIAN BAY.
 HEIGHT 13.8

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	17	7	18	7	18	8	18	1

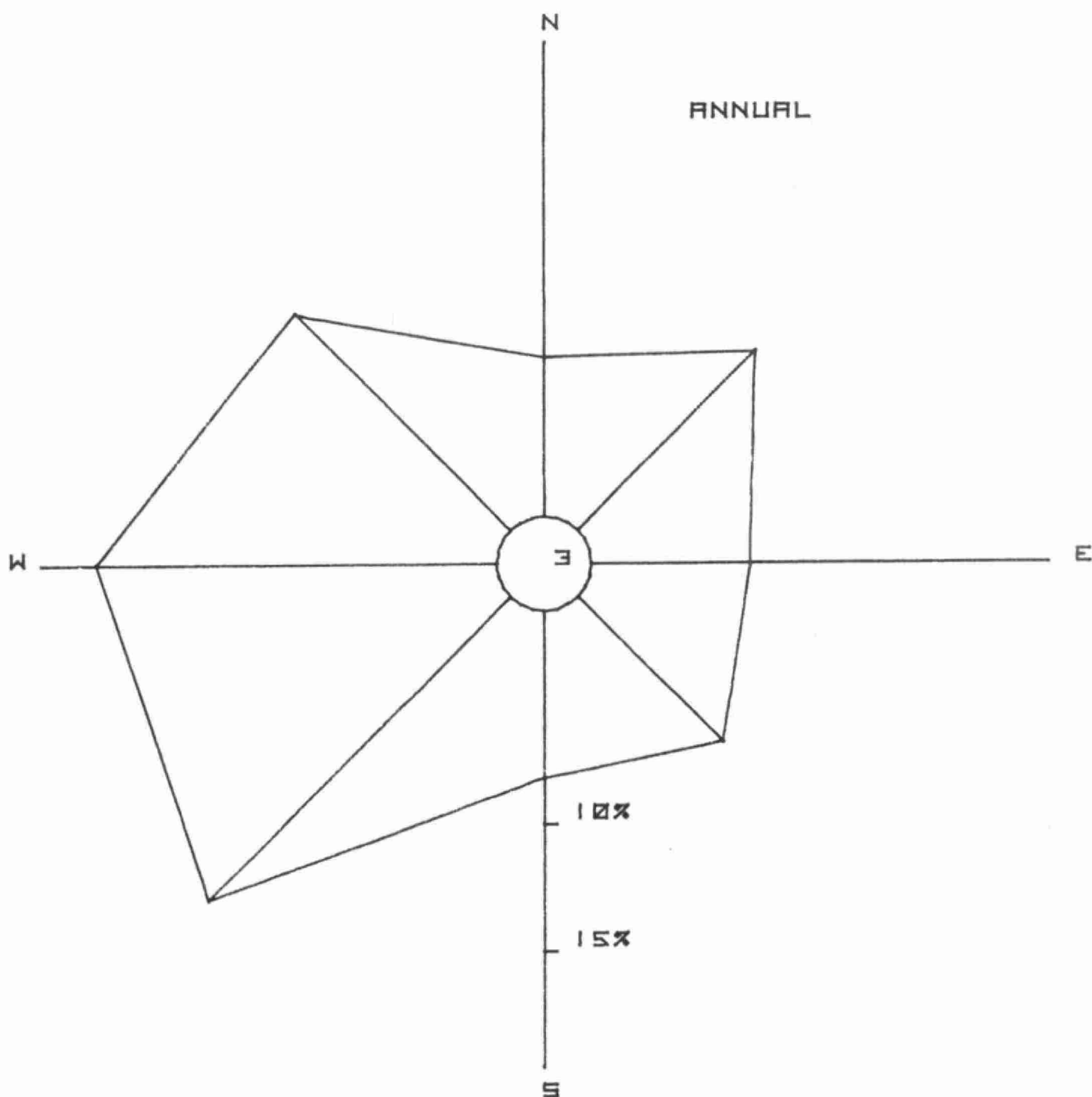


STATION INFORMATION

LOCATED AT DOMINION FORESTRY STN.
1.5KM S OF TOWN IN SHALLOW E-W VALLEY.
ROLLING WOODED AREA AROUND STN.
HEIGHT 30.8M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
1	1	4	4	5	10	10	33	1

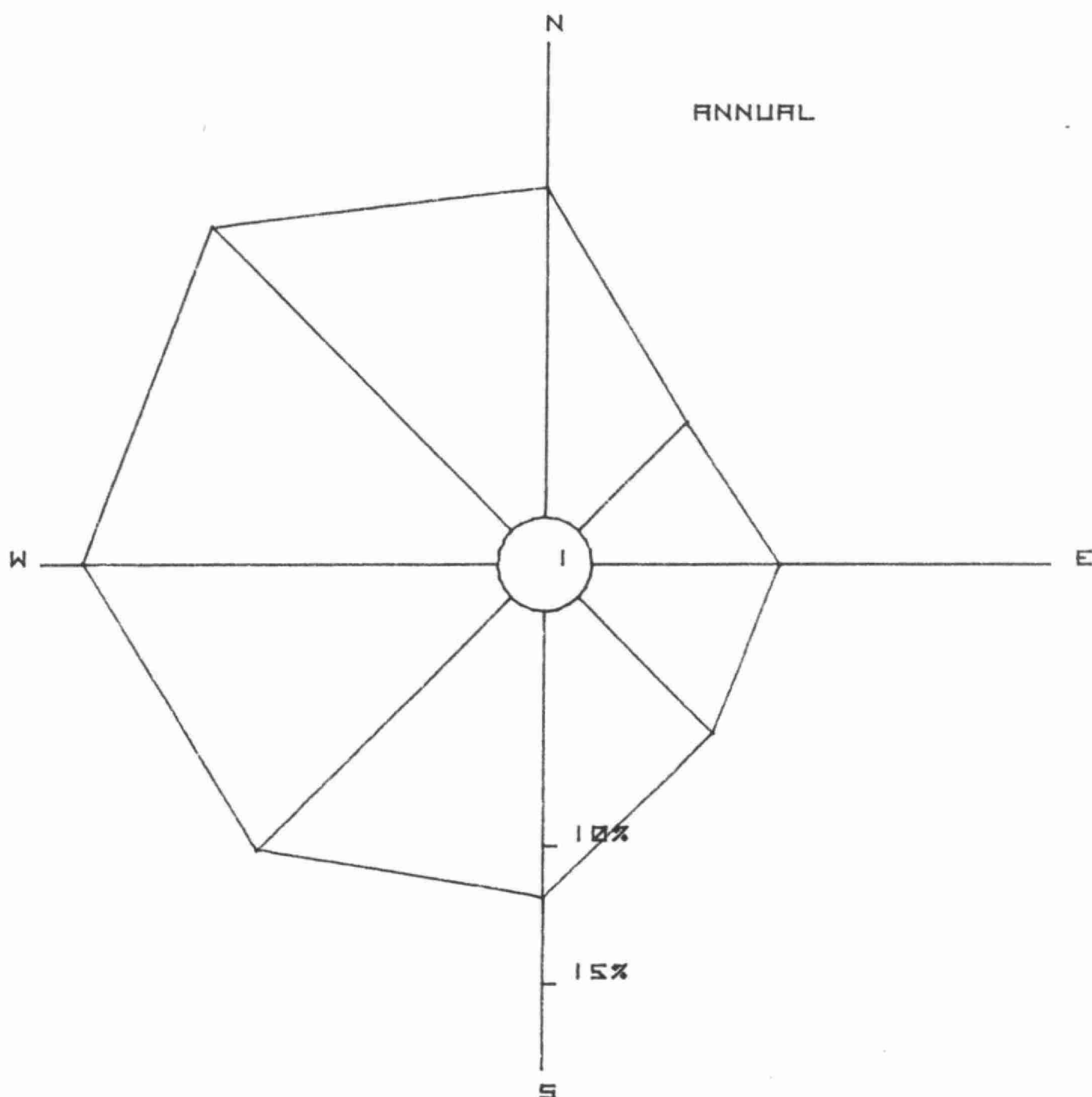


STATION INFORMATION

LOCATED FORESTRY STN PICKLE LAKE LANDING.
WELL EXPOSED AREA IS ROCKY AND ROLLING WITH
NUMEROUS LAKES AND TREES.
HEIGHT 10.5M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	12	8	10	8	10	18	14	3

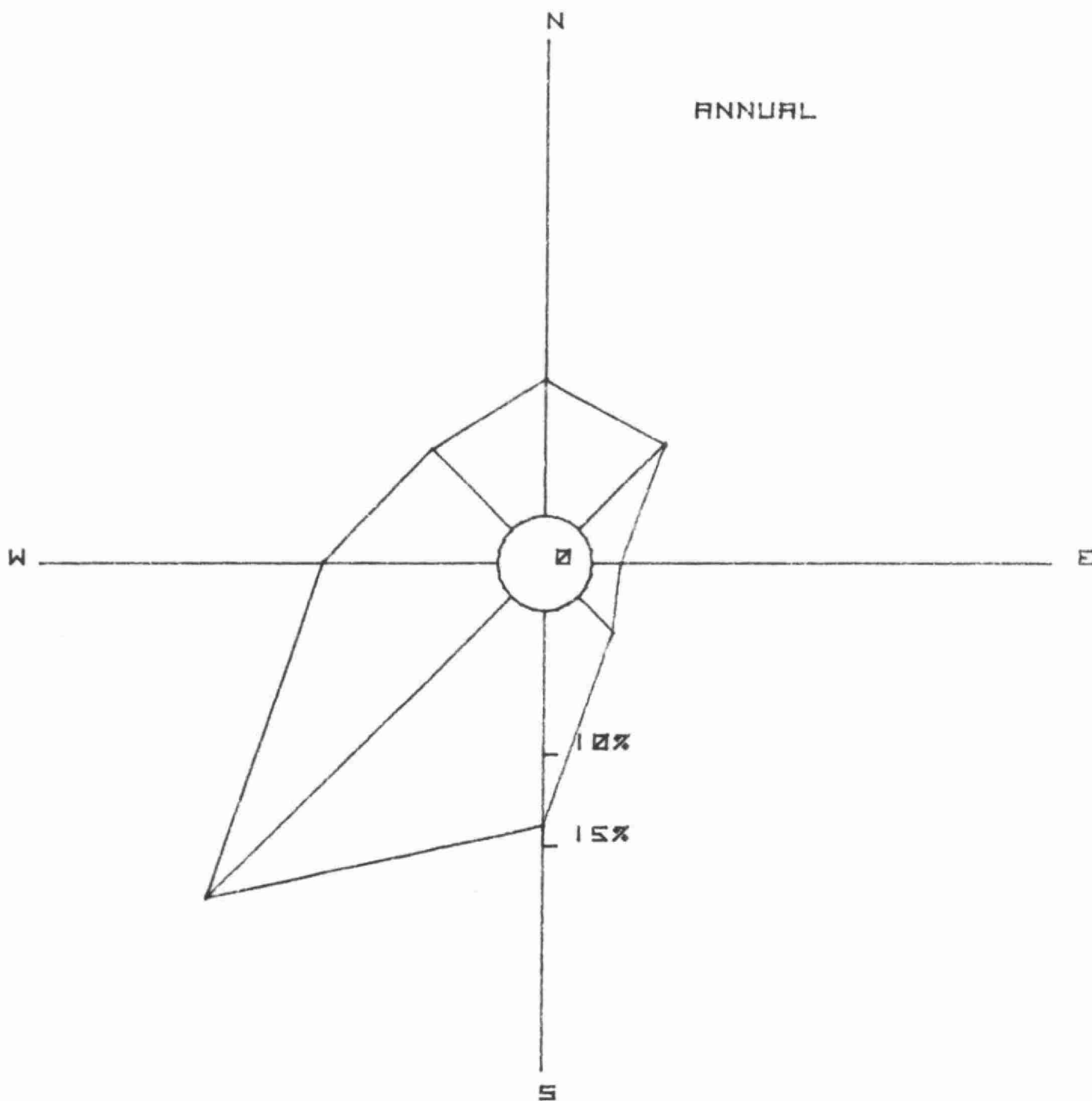


STATION INFORMATION

LOCATED
AT AIRPORT IN BUSH COUNTRY LEVEL
WITH SLIGHT HILLS AND RIDGES.
HEIGHT 16.3M

PERCENTAGE FREQUENCY

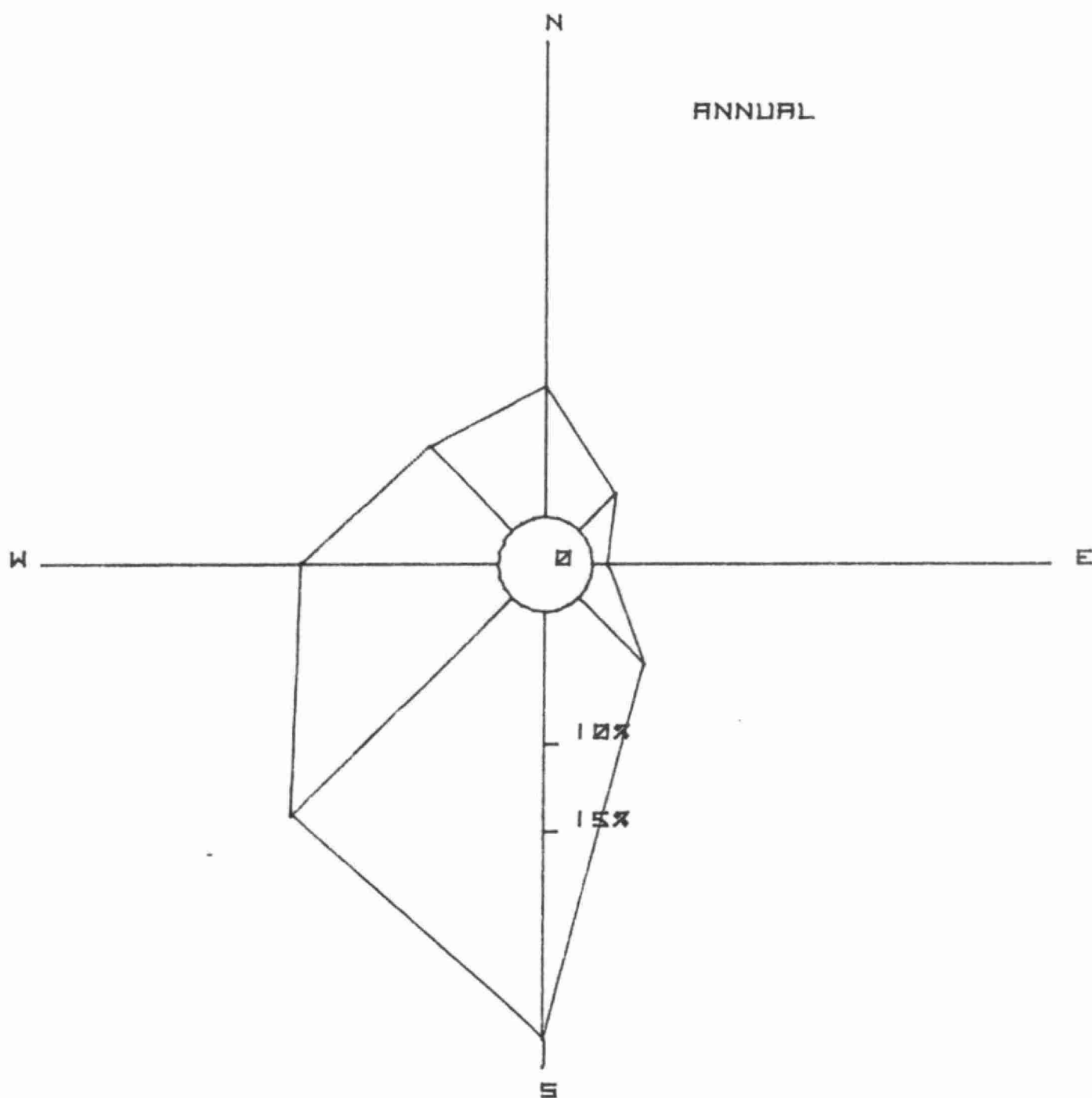
N	NE	E	SE	S	SW	W	NW	CALM
14	7	8	8	12	15	17	17	1



STATION INFORMATION
 LOCATED
 AT MARINE LIGHTHOUSE
 IN LAKE ERIE.
 HEIGHT 20.3M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
10	0	1	0	1	0	1	0	0

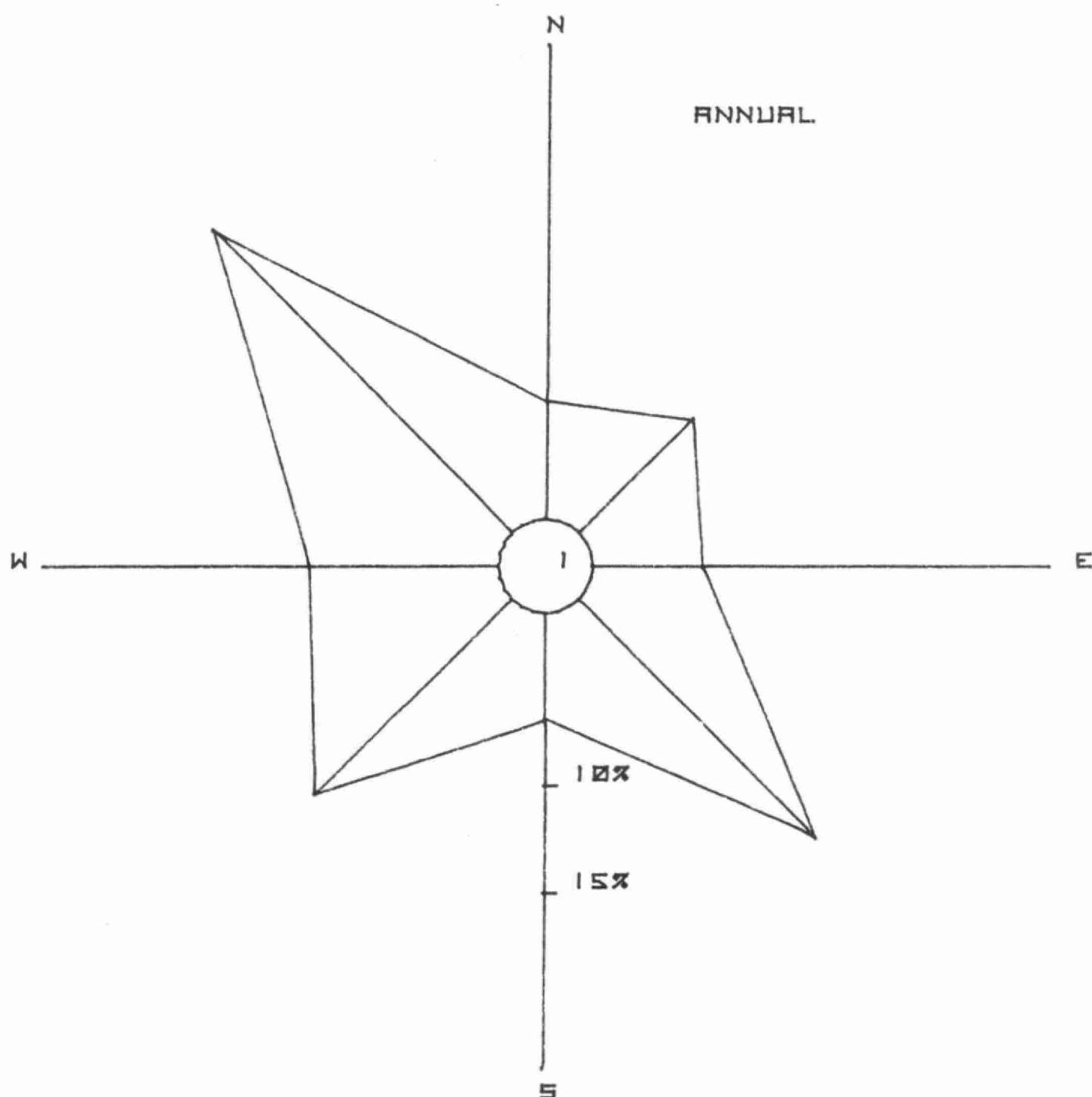


STATION INFORMATION

LOCATED
 WRAY MINOR RD
 PT MAITLAND
 HEIGHT 9.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
10	8	7	6	27	20	14	8	0

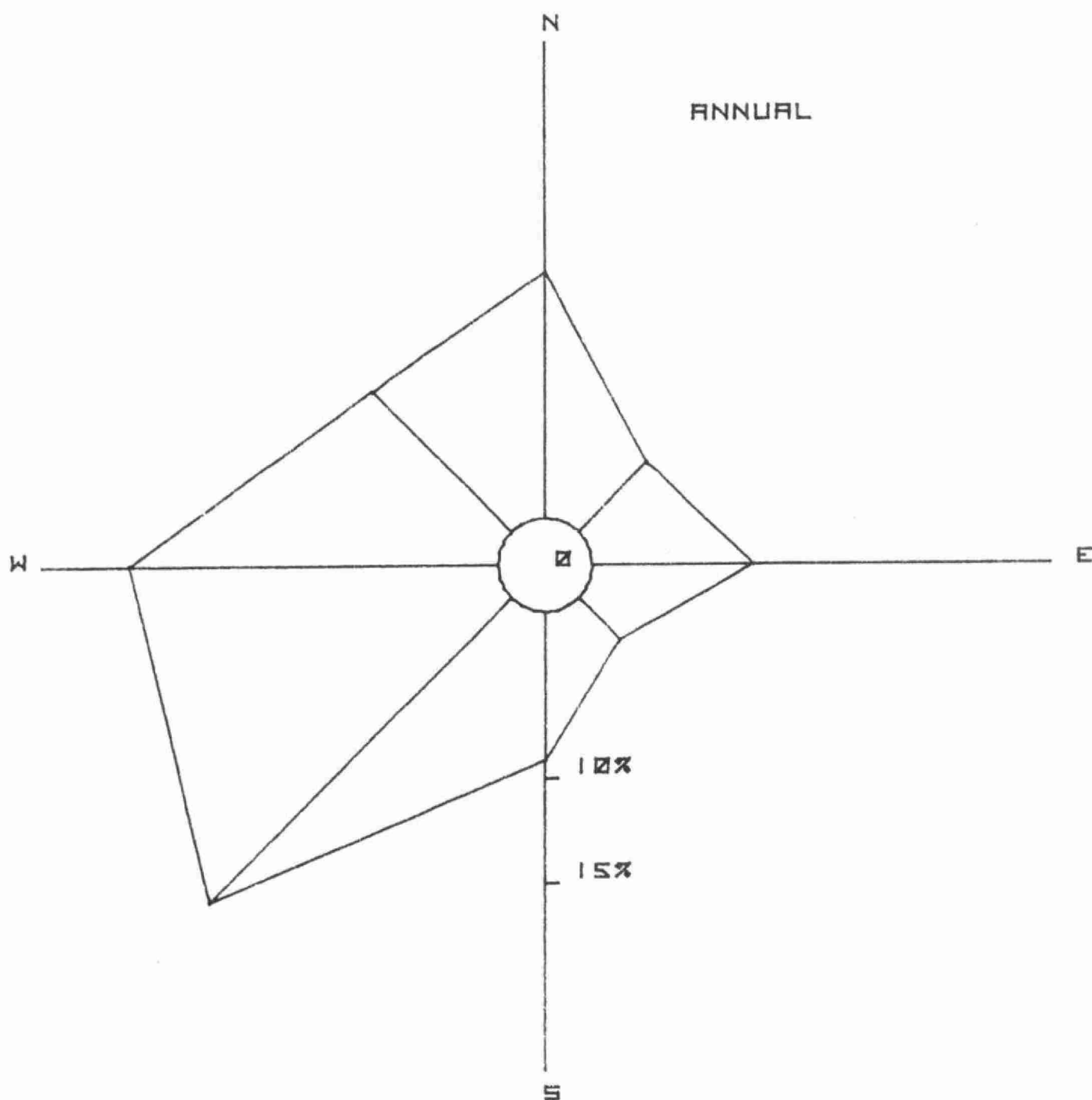


STATION INFORMATION

LOCATED AT COCHENDOUR 8KM W OF RED LAKE
AIRPORT 4KM N OF TOWN. AREA IS FOREST COVERED
MUSKEG, ROCKY WITH MANY LAKES.
HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	10	7	10	7	15	11	22	1



STATION INFORMATION

LOCATED

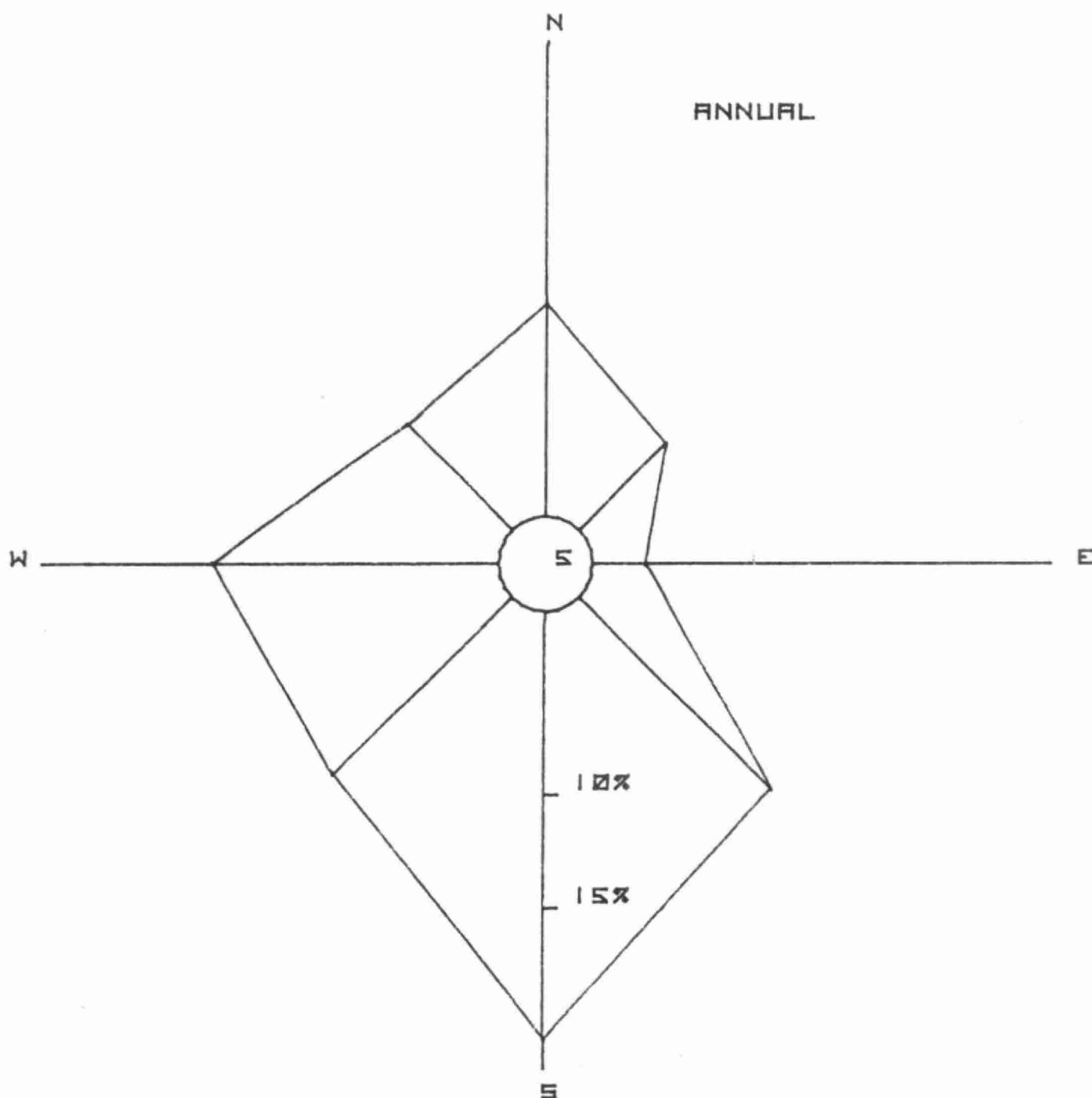
AT FERN FORD

1012 TALBOT ST. ST THOMAS

HEIGHT 9.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
11	7	10	8	0	0	0	12	0



STATION INFORMATION

LOCATED

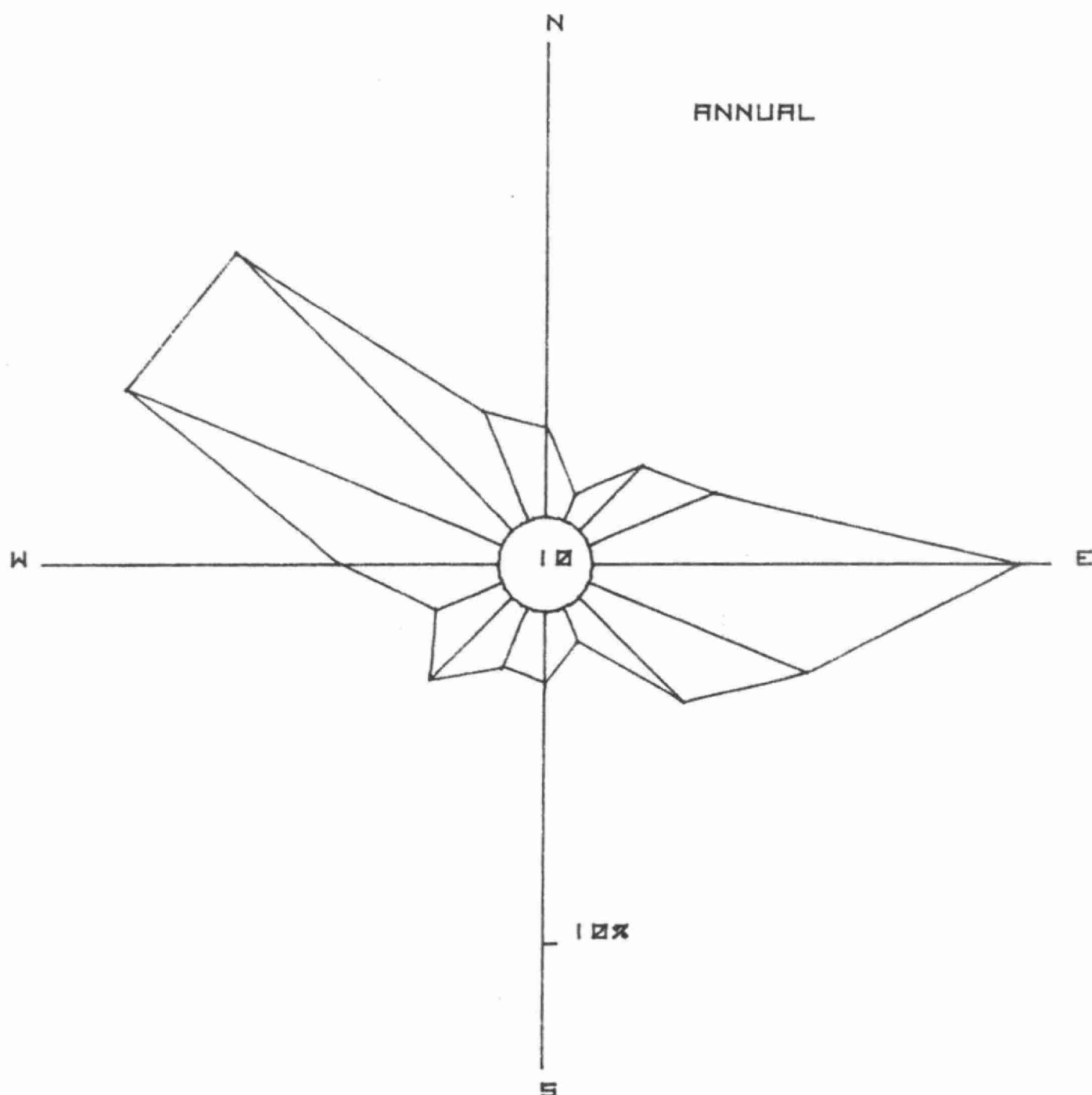
WAS AT RADIO RANGE STN.

11.2KM SE FROM TOWN CENTRE.

HEIGHT 10.8M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
11	7	4	14	21	13	15	8	5

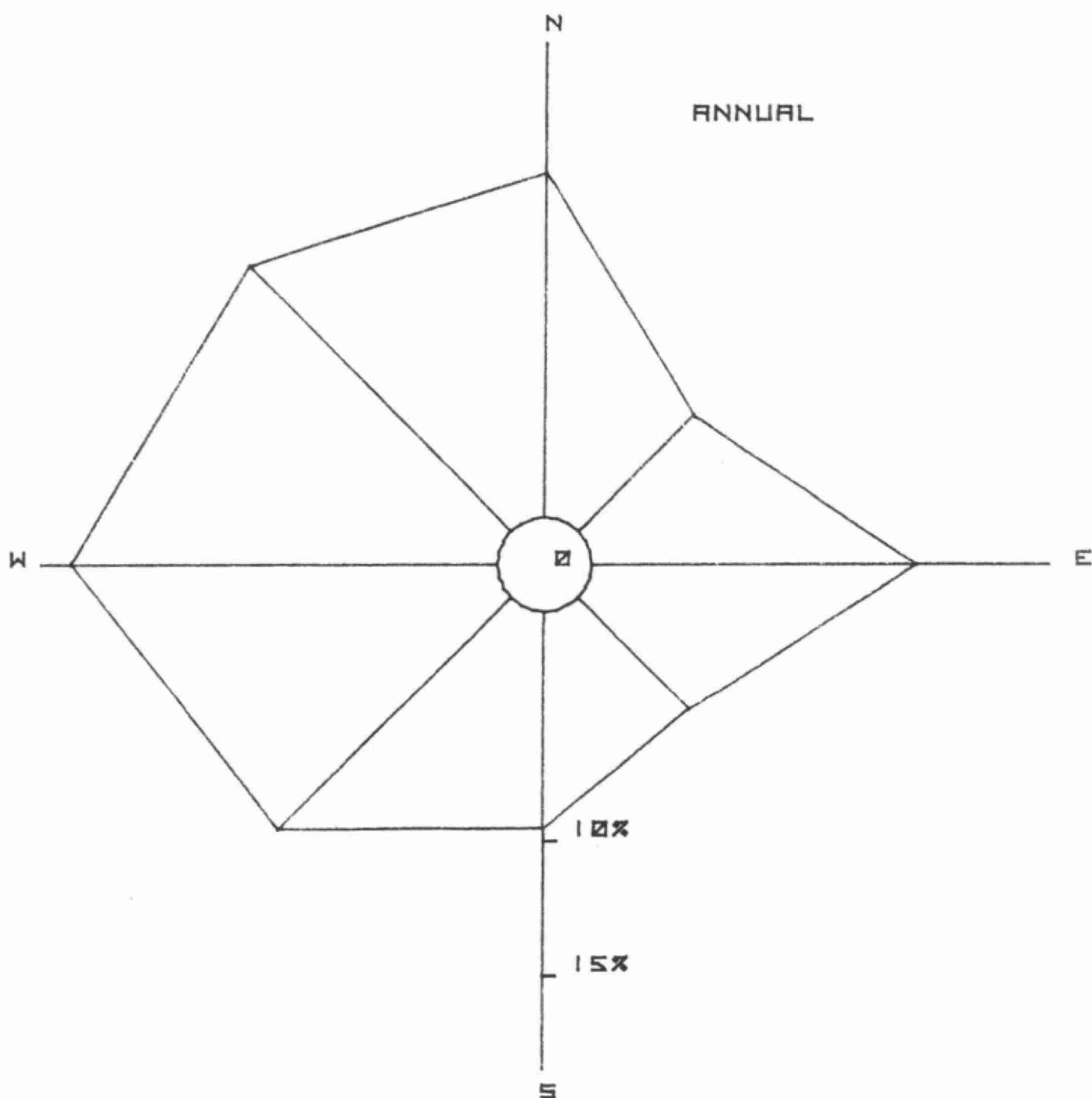


STATION INFORMATION

LOCATED AT AIRPORT IN FLAT COUNTRY. APPROX
6.4KM TO THE N IS A RIDGE OF HILLS. 3.8KM TO
N-NW IS LAKE SUPERIOR. 1.2KM TO THE SOUTH IS
THE RIVER. HEIGHT 12.9M

PERCENTAGE FREQUENCY

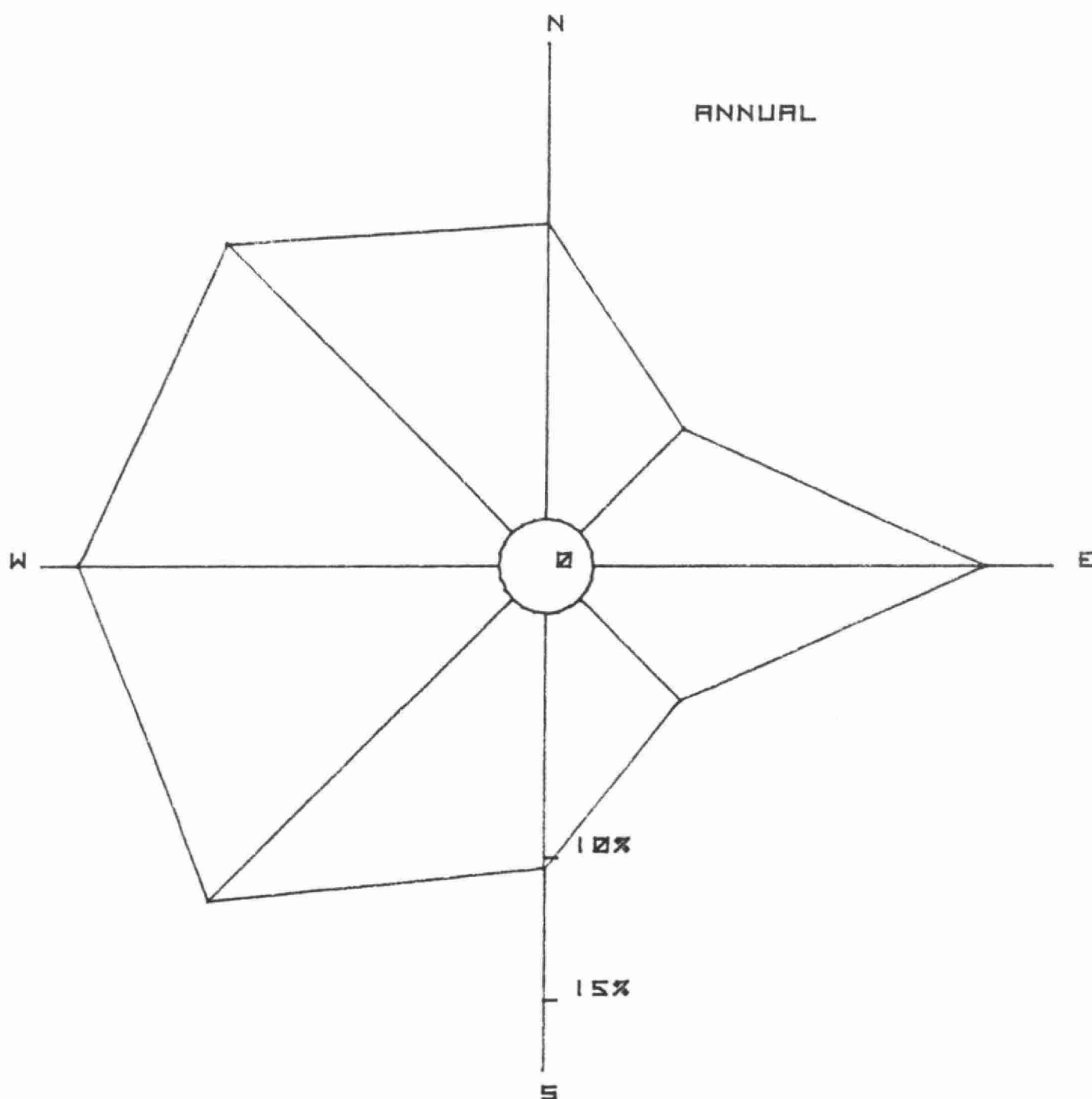
N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
4	2	4	5	13	8	5	2	3	3	4	3	5	12	12	4	10



STATION INFORMATION
 LOCATED
 AT LAWRENCE/KENNEDY
 IN SCARBOROUGH
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

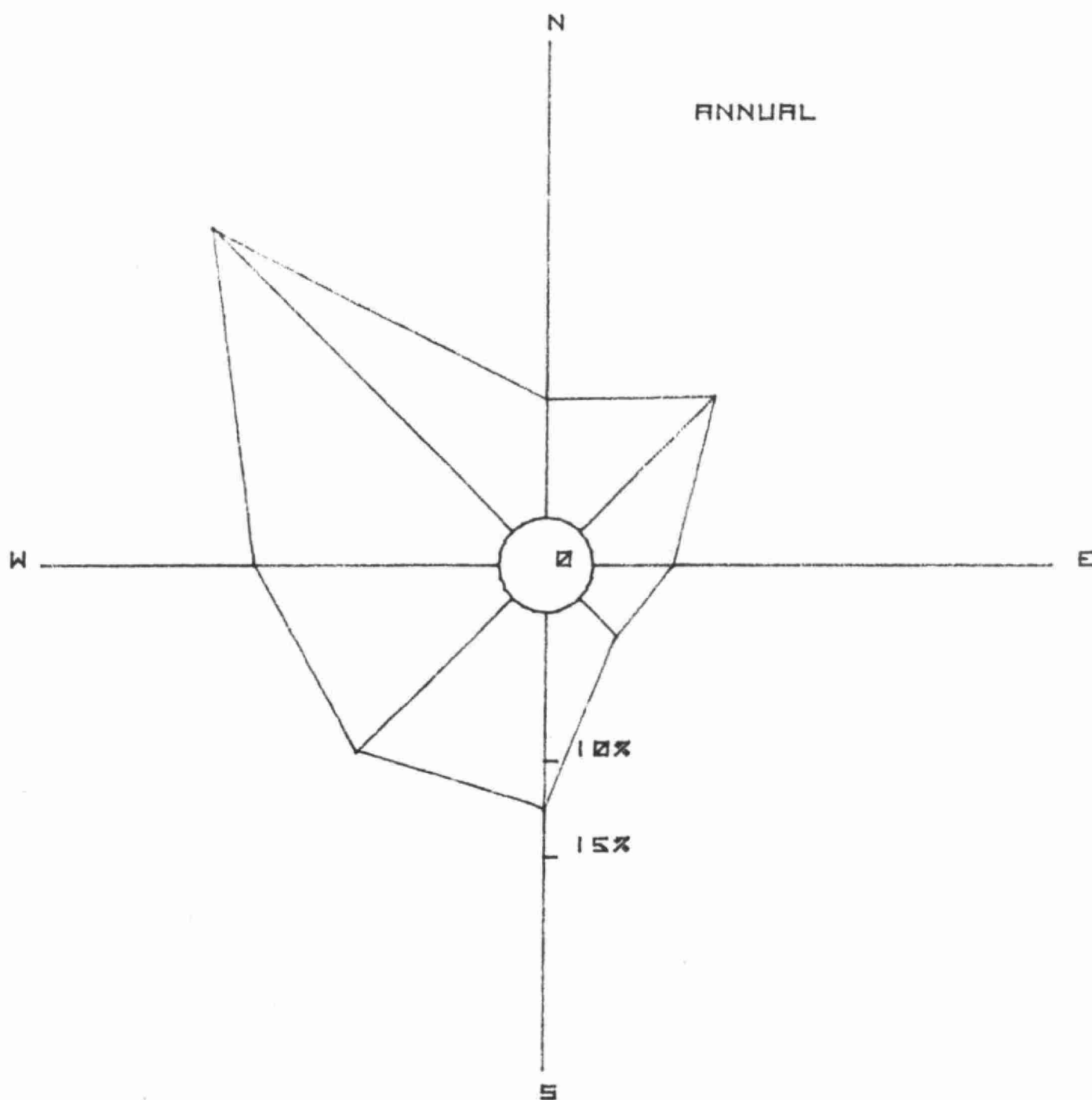
N	NE	E	SE	S	SW	W	NW	CALM
11	8	14	8	10	14	17	15	0



STATION INFORMATION
 LOCATED
 AT LAWRENCE/KENNEDY
 IN SCARBOROUGH
 HEIGHT 61.6M

PERCENTAGE FREQUENCY

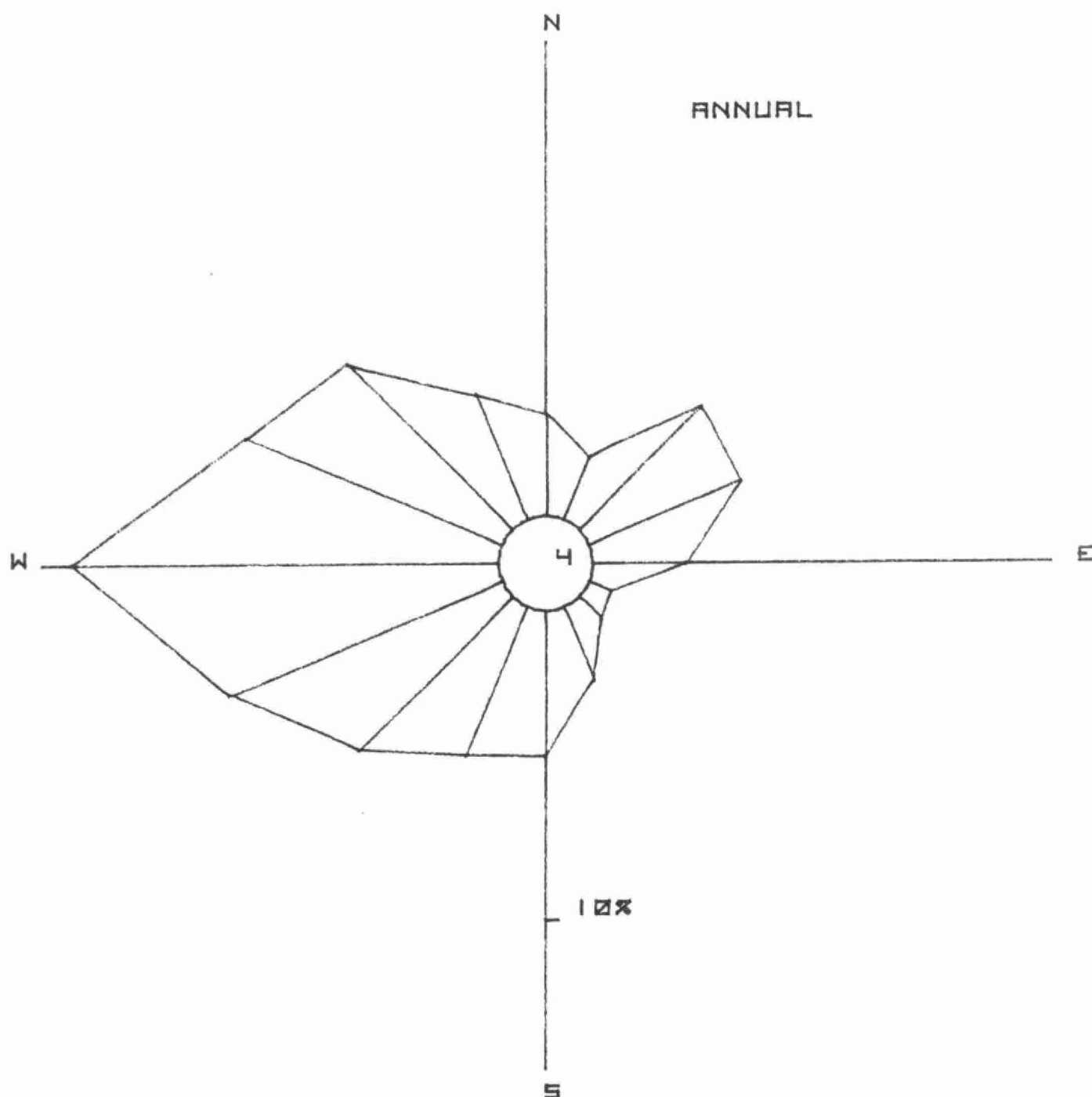
N	NE	E	SE	S	SW	W	NW	CALM
12	7	15	7	11	17	18	16	2



STATION INFORMATION
 LOCATED
 AT OLIVER MOWATT PS
 IN SCARBOROUGH
 HEIGHT 13.8M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
0	12	7	5	13	14	18	25	0

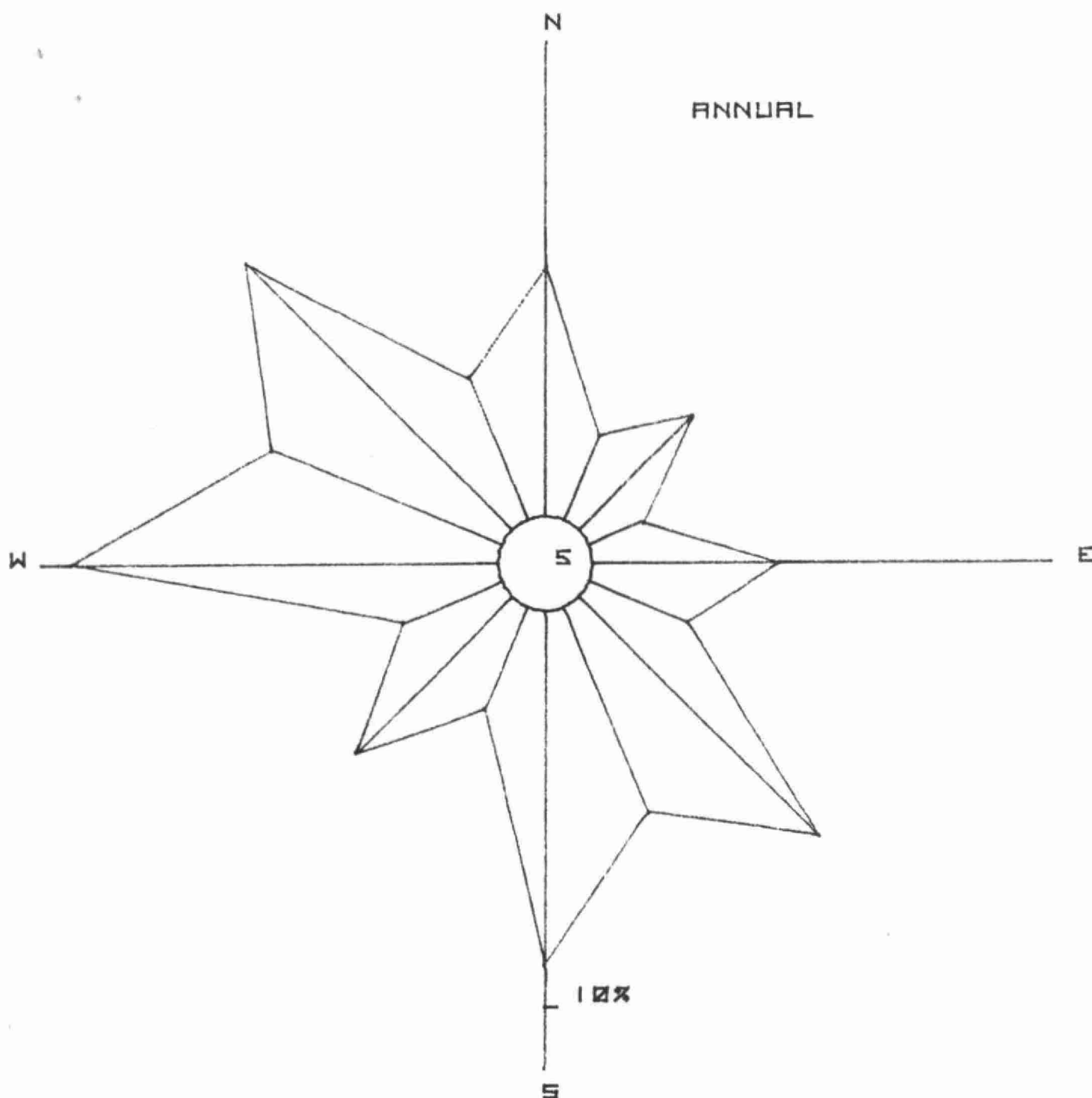


STATION INFORMATION

LOCATED AT HORTICULTURE EXPERIMENTAL FARM
 4KM E-NE OF TOWN ON HWY 3 IN ROLLING COUNTRY
 WITH TOWER ON RIDGE. NO OBSTRUCTIONS.
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
1	3	8	8	4	2	2	4	5	8	7	10	13	8	8	5	4

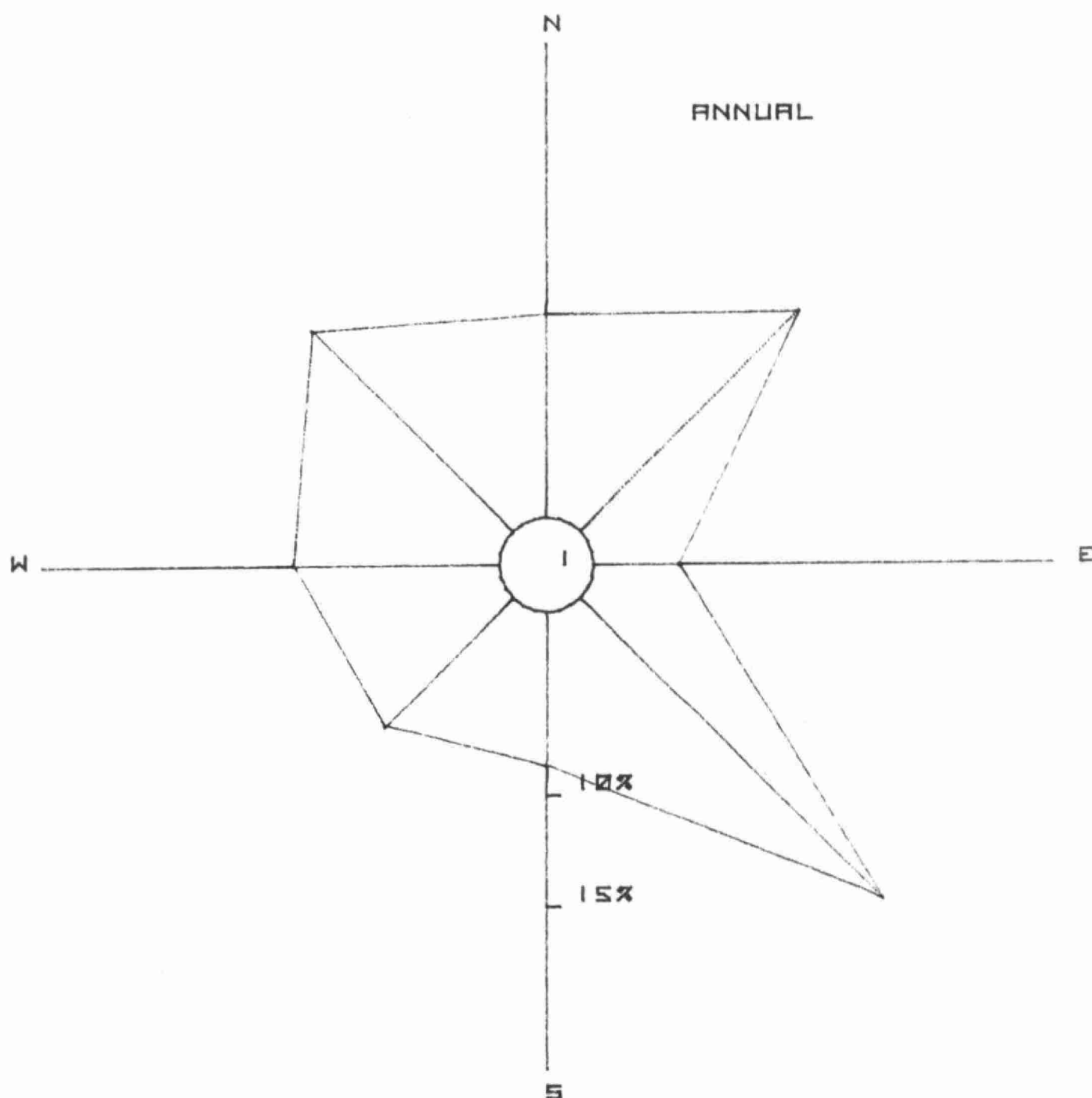


STATION INFORMATION

LOCATED 2.8KM TO N OF SIOUX LOOKOUT. ANEMO-
METER IS ATTACHED TO 20M BEACON TOWER. AREA
IS HILLY AND HEAVILY TREED WITH MANY LAKES.
HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
7	3	5	2	5	3	8	8	8	1	8	9	11	7	10	5	5

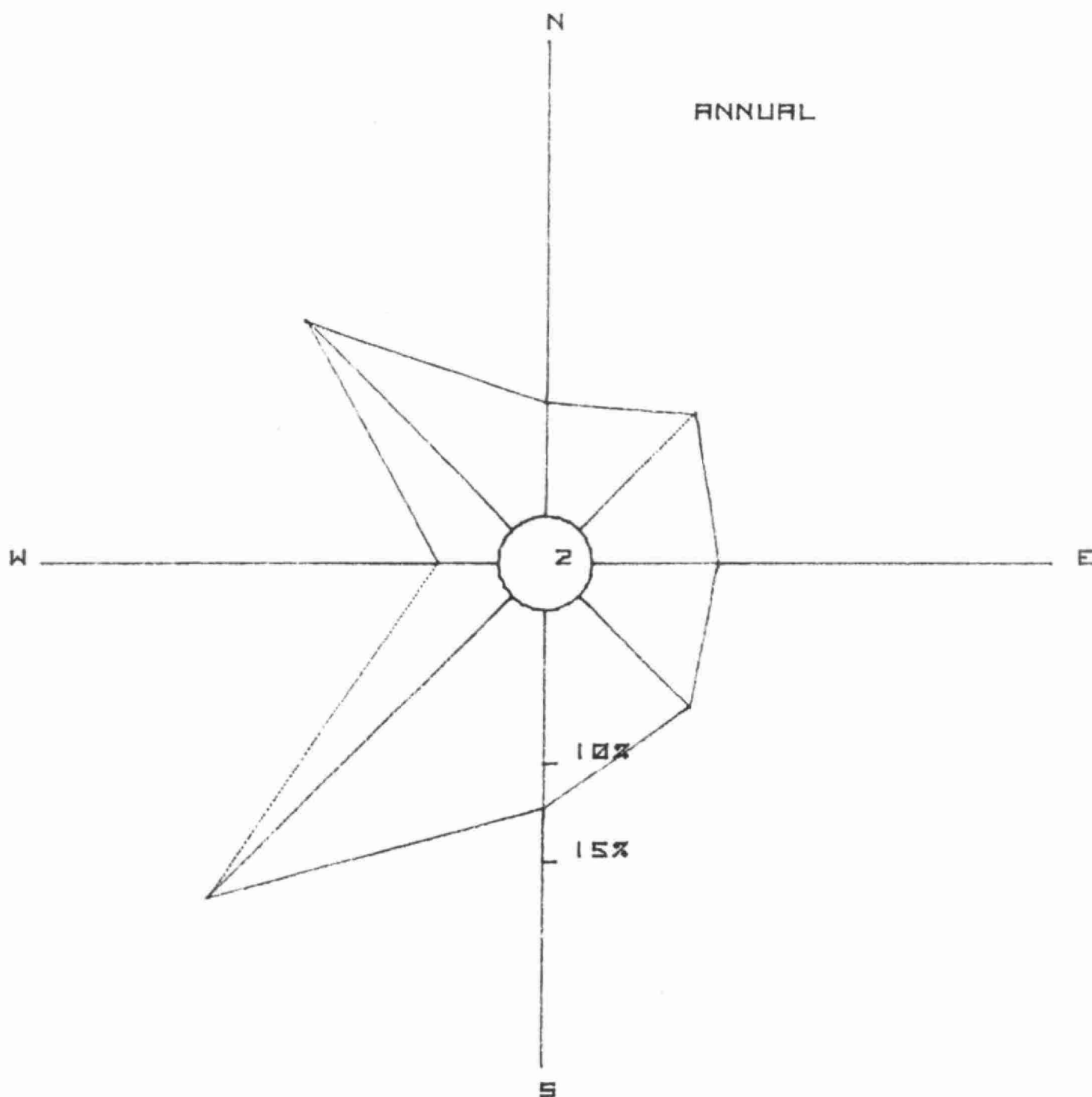


STATION INFORMATION

LOCATED ON SE TIP OF PATTERSON I WHICH
IS 6.4KM WIDE AND 8KM LONG. SURROUNDING
AREA DENSELY TREED WITH HEAVY SHRUBBERY.
HEIGHT 11.1M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
11	18	8	21	2	10	11	15	1

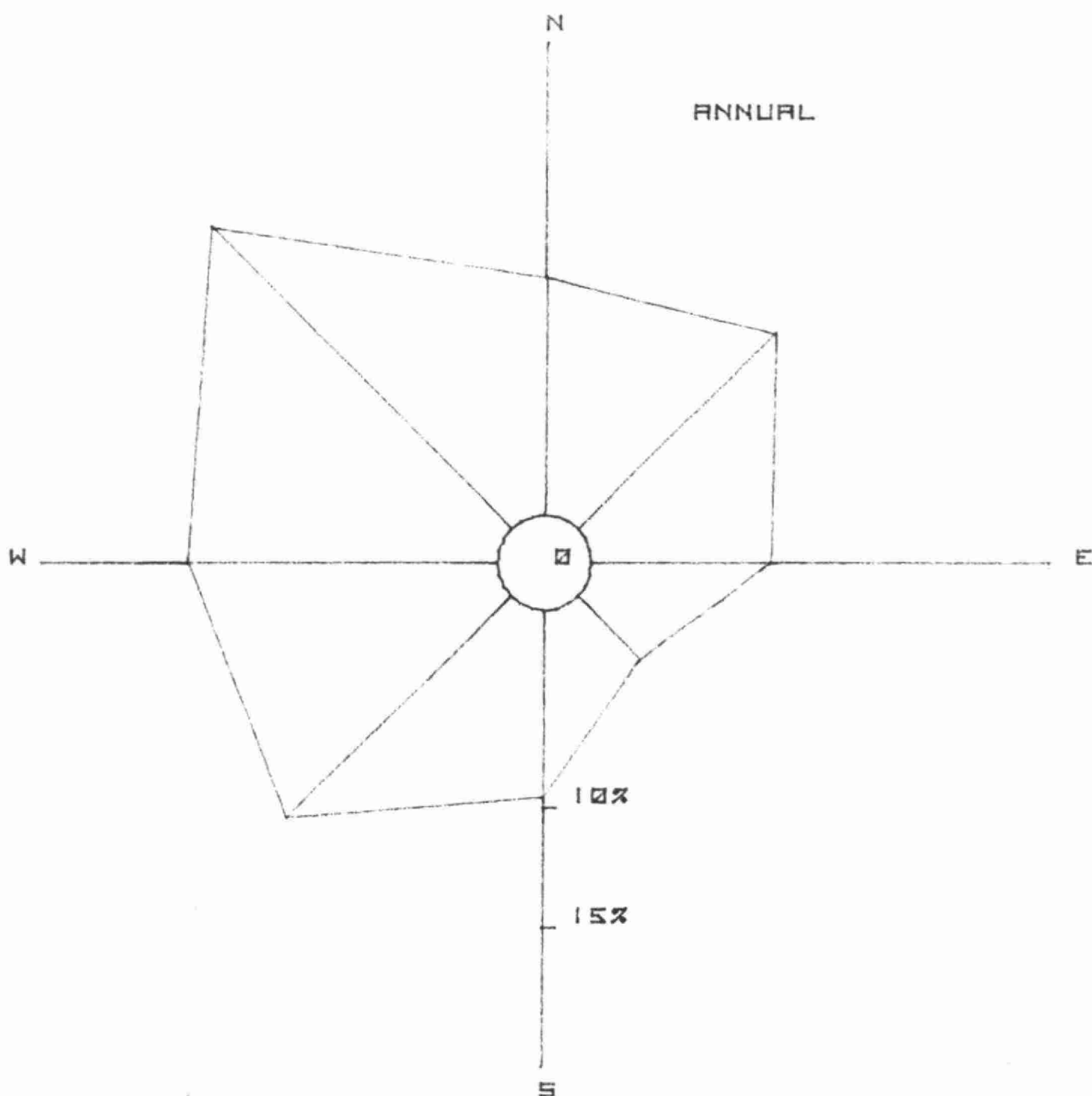


STATION INFORMATION

LOCATED S BANK SAUGEEN RIVER N END OF TOWN.
 AREA FLAT TO SW ROLLING E-N. WITH OBSTRUCTION
 TO S-SE WITH TREES SAME HEIGHT AS ANEMOMETER
 HEIGHT 10.8M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	11	8	10	13	24	5	17	2

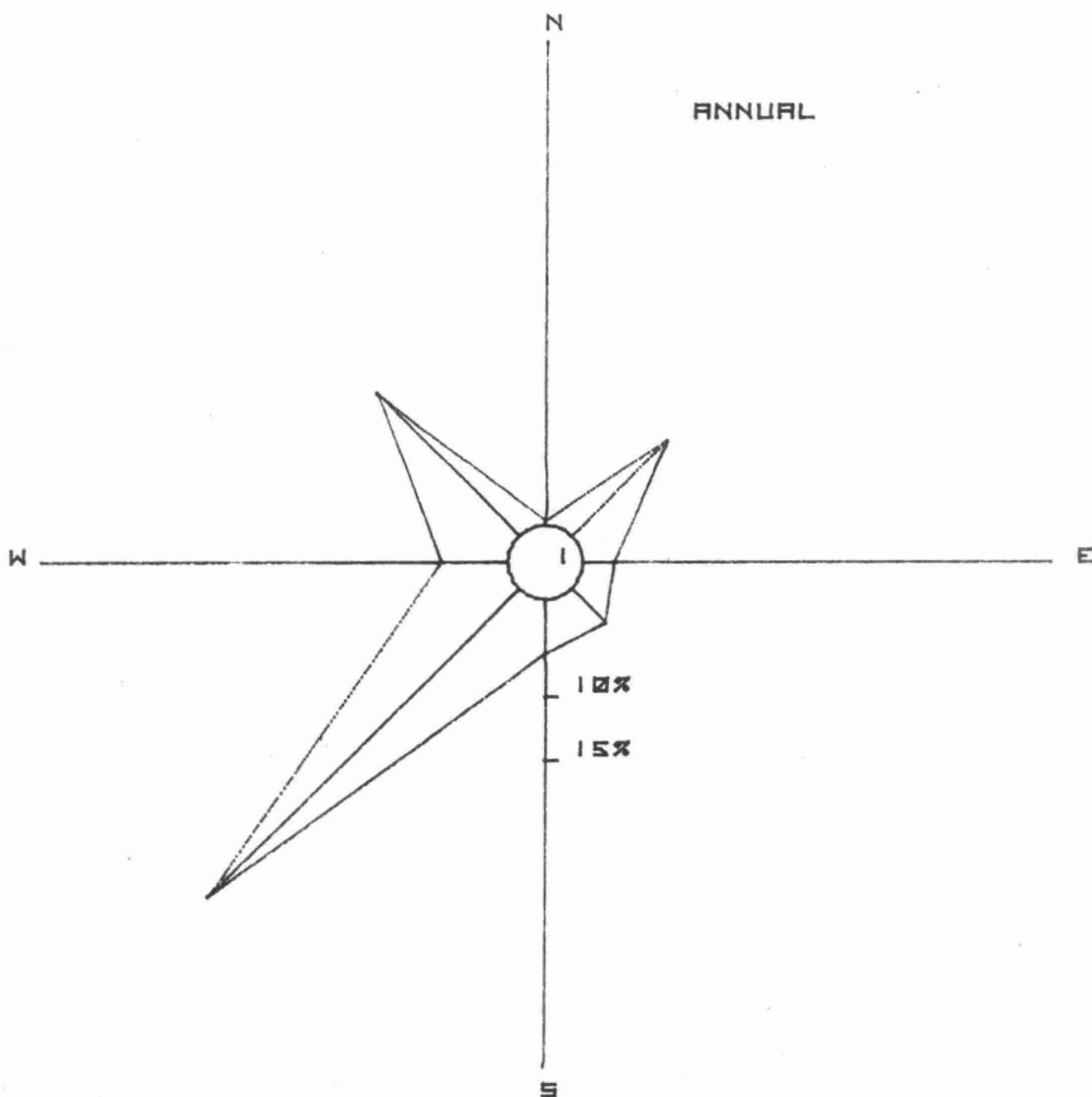


STATION INFORMATION

LOCATED AT LANDS AND FOREST STN. WOODED
 RIDGE EXTENDS NW OF STATION. E-S EXPOSURE
 IS ON SOUTH BAY. SHELTERING FROM W AND N.
 HEIGHT 24.9M

PERCENTAGE FREQUENCY

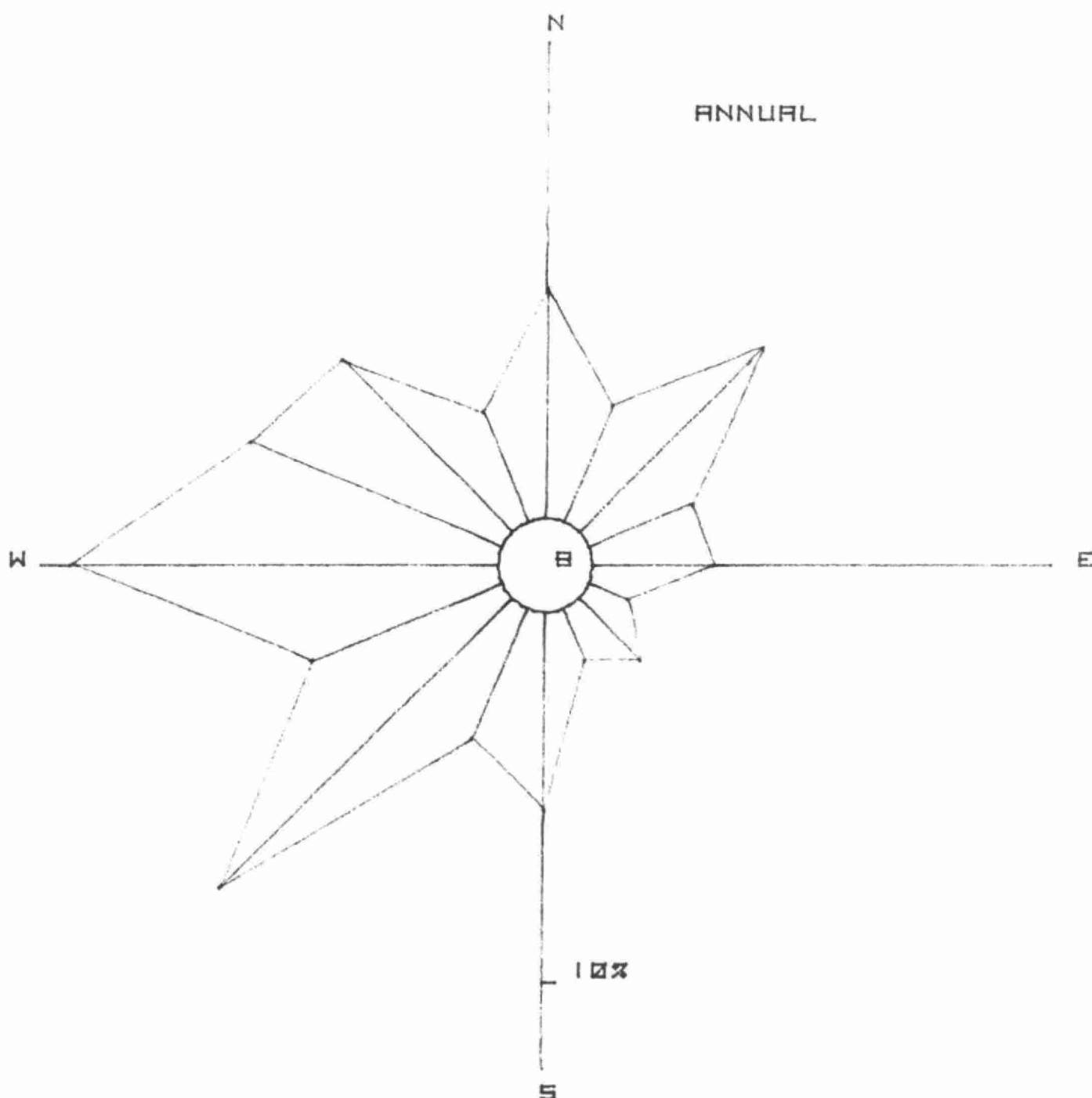
N	NE	E	SE	S	SW	W	NW	CALM
12	13	8	8	10	18	18	22	2



STATION INFORMATION
 LOCATED
 OUTSIDE N LIMITS OF CITY
 IN FRUIT FARM AREA.
 HEIGHT 11.4M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
3	13	5	7	7	37	8	18	1

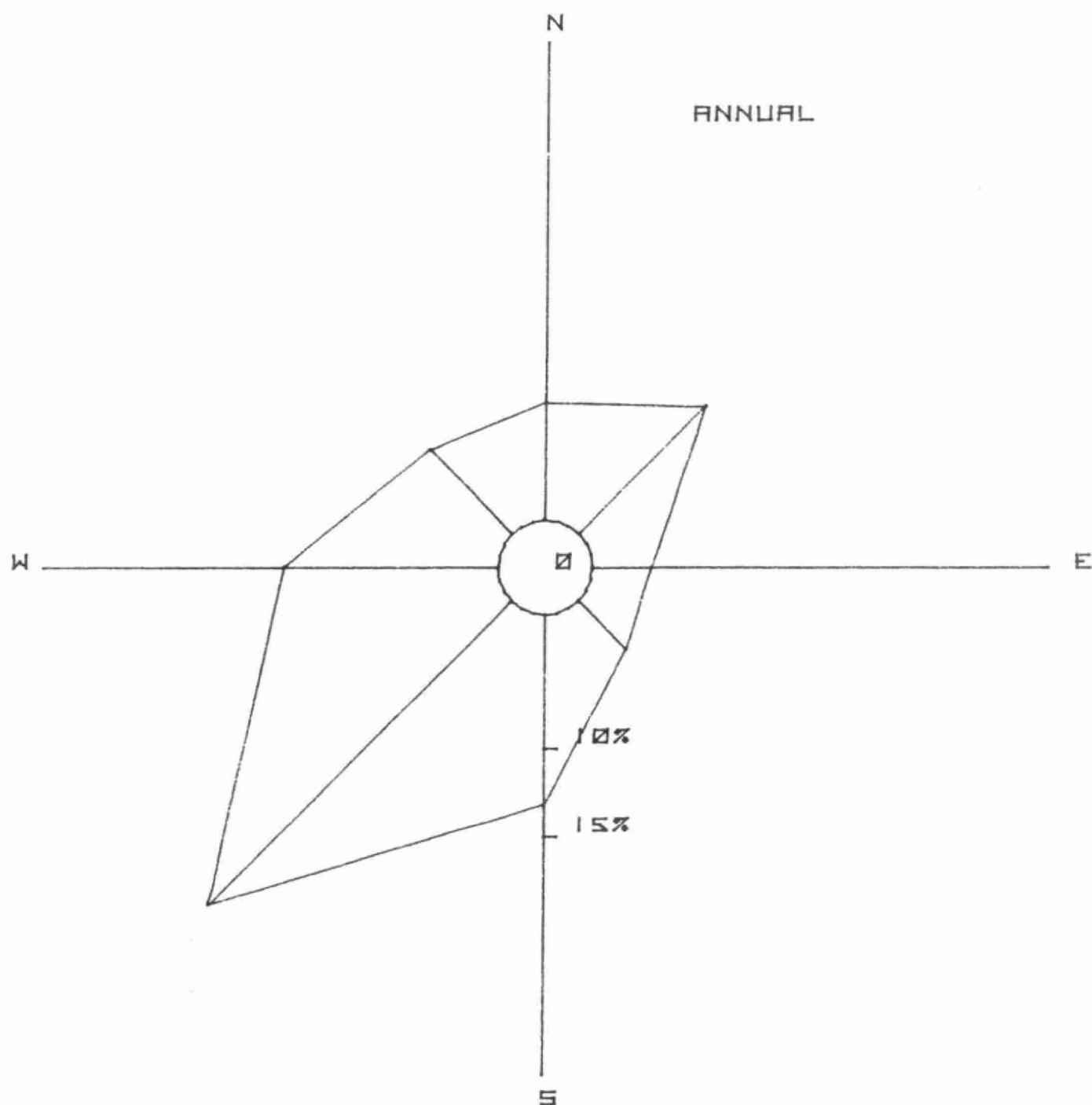


STATION INFORMATION

LOCATED 7.2KM W-NW ON CONCESSION RD 2KM
N OF MAIN RD. ROLLING COUNTRY IN ALL
DIRECTIONS. TREES 45M HIGH OBSTRUCTS TO W.
HEIGHT 14.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
7	4	7	4	4	2	3	2	6	5	11	6	11	6	7	4	6



STATION INFORMATION

LOCATED

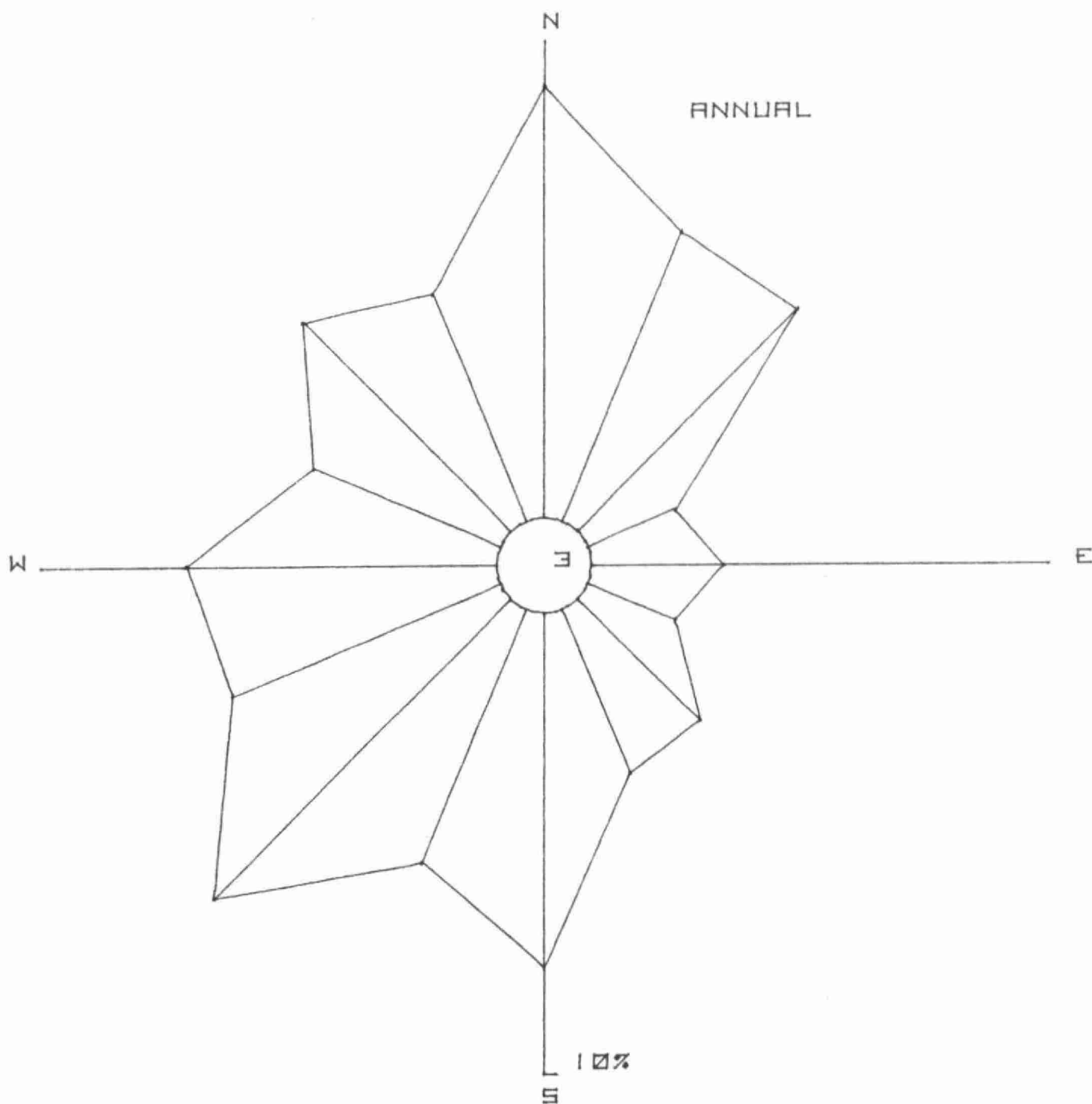
ON J TENNYSON'S PROPERTY

GRID REFERENCE 06186-47476

HEIGHT 10.1M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	13	6	7	13	27	15	8	0

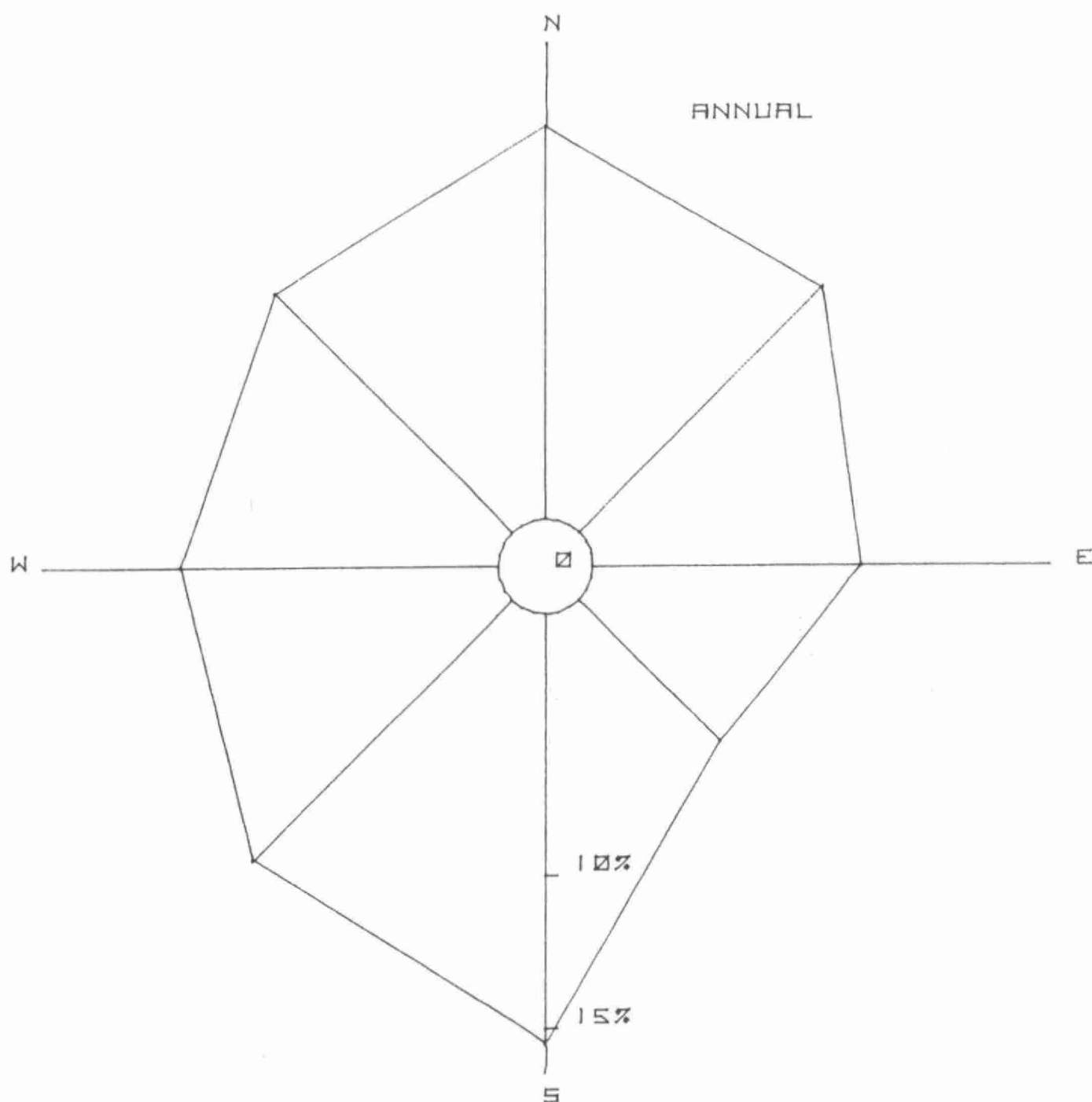


STATION INFORMATION

LOCATED 24KM NE OF CITY ON PLATEAU, NEAR A
VALLEY THAT IS 16KM LONG ABOUT 4.6KM W.
COUNTRY IS ROLLING
HEIGHT 10.2M

PERCENTAGE FREQUENCY

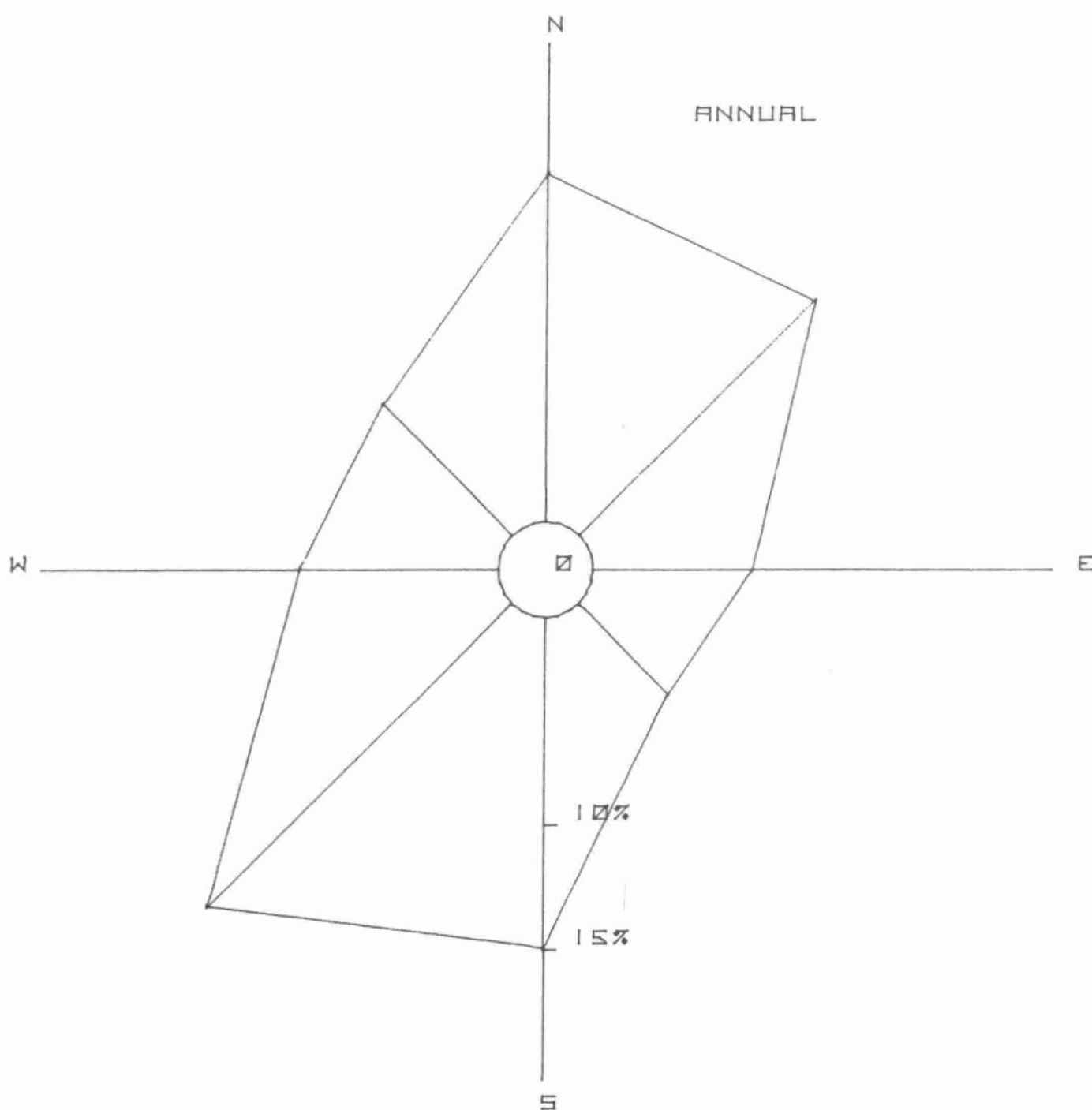
N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
8	7	7	3	4	3	4	4	8	6	9	7	7	5	7	6	3



STATION INFORMATION
 LOCATED
 ON WATER TANK
 ON ASH ST. SUDBURY
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

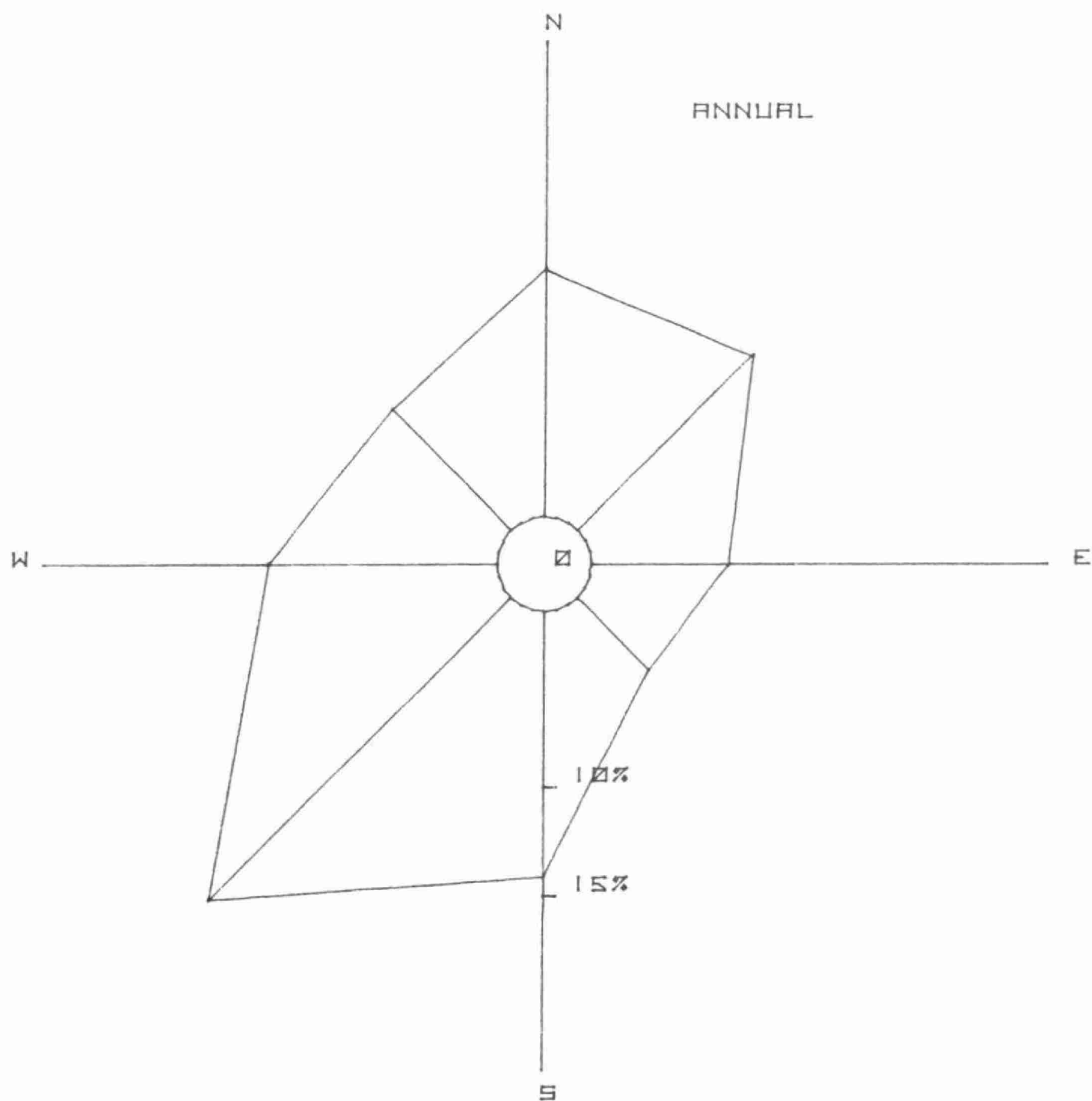
N	NE	E	SE	S	SW	W	NW	CALM
14	13	10	8	16	14	21	13	0



STATION INFORMATION
 LOCATED
 ON CKNC TV TOWER
 699 FROOD RD. SUDBURY
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

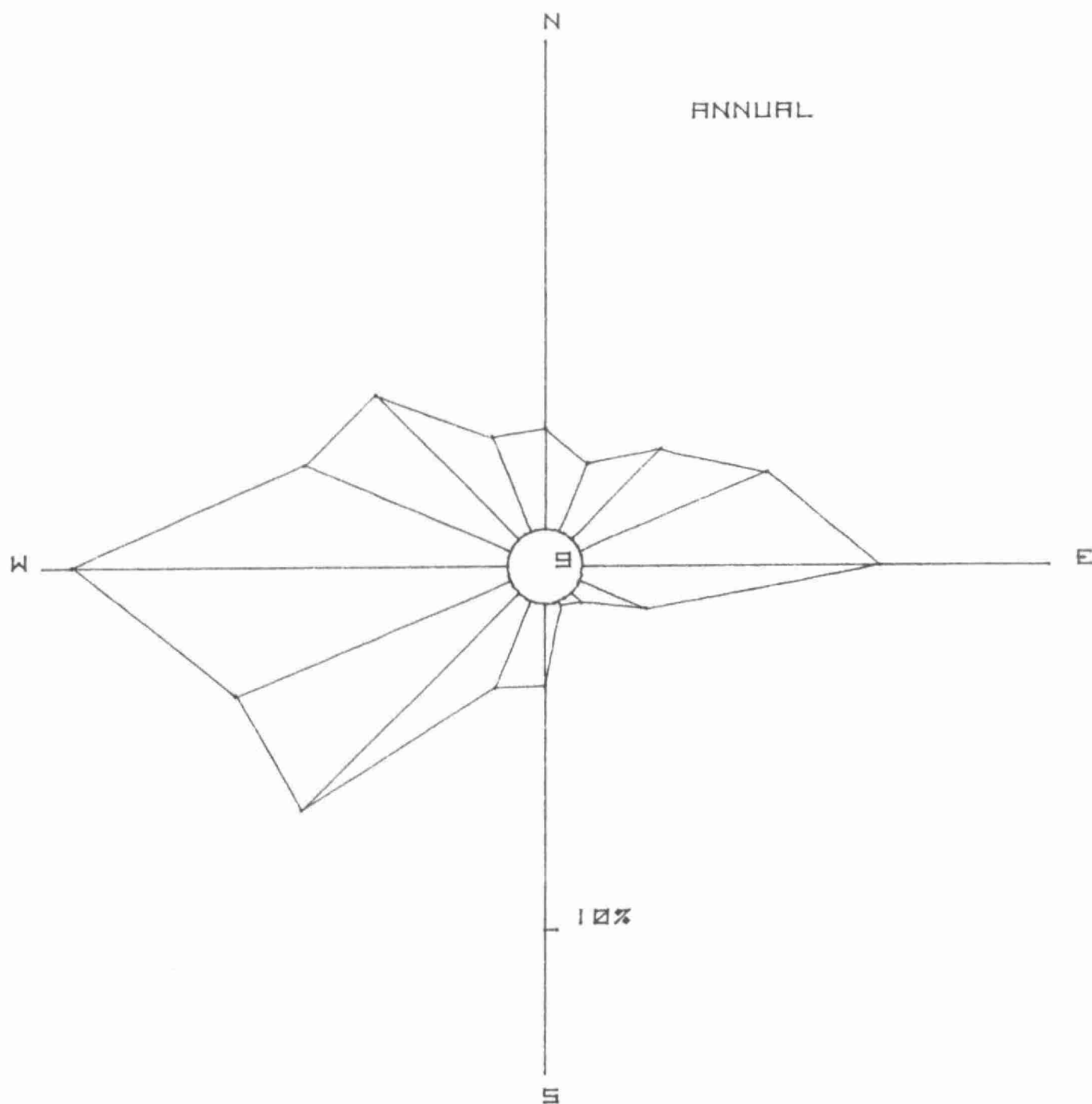
N	NE	E	SE	S	SW	W	NW	CALM
16	15	8	7	15	18	10	9	0



STATION INFORMATION
 LOCATED
 ON CKNC TV TOWER
 699 FROOD RD., SUDBURY
 HEIGHT 116.9M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
13	13	8	7	14	22	13	10	0

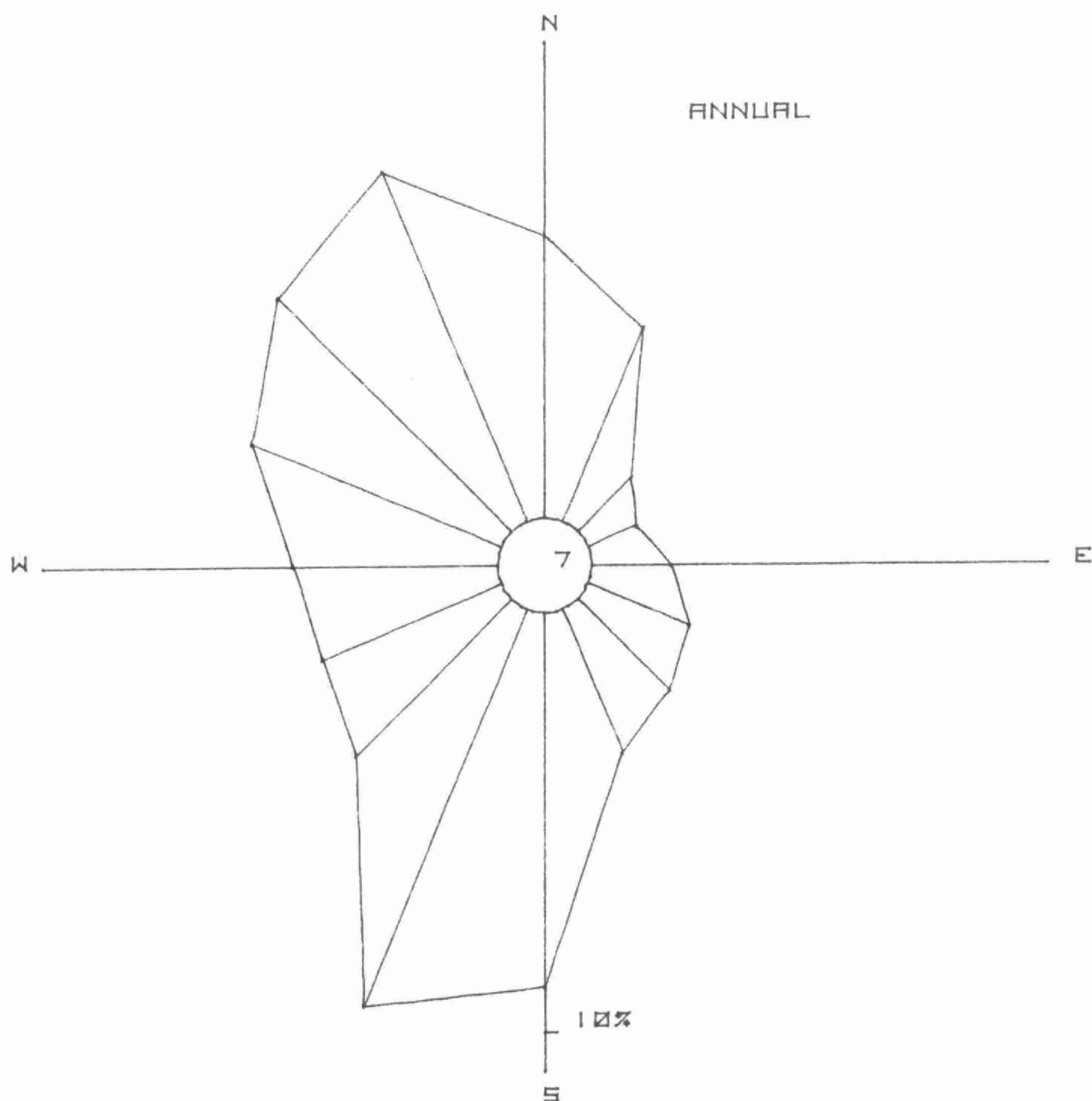


STATION INFORMATION

LOCATED 8KM W OF LAKE SUPERIOR. HIGH
GROUND ALL DIRECTIONS EXCEPT E. LOCAL
AREA FLAT. MT MCKAY 3.2KM TO S.
HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
4	3	5	7	9	3	1	1	3	4	10	9	13	7	7	4	9

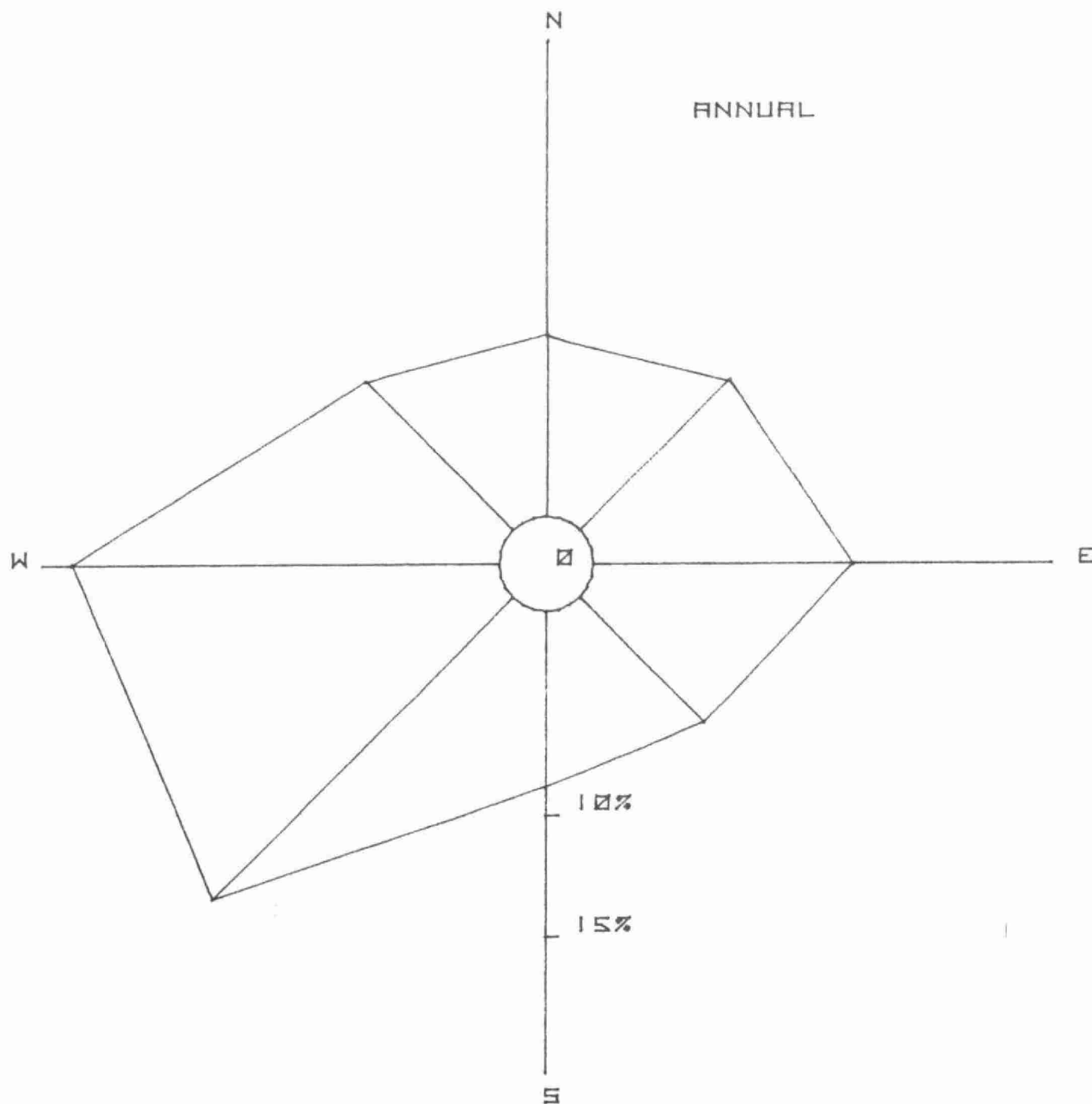


STATION INFORMATION

LOCATED IN BUSH/FOREST COUNTRY, SLIGHT
 ROLL WITH ODD HILL. NO OBSTRUCTIONS, BUT
 BLDG WHERE MOUNTED MAY EFFECT READINGS.
 HEIGHT 11.6M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
7	8	3	2	3	3	4	4	8	10	8	5	5	7	8	8	7



STATION INFORMATION

LOCATED

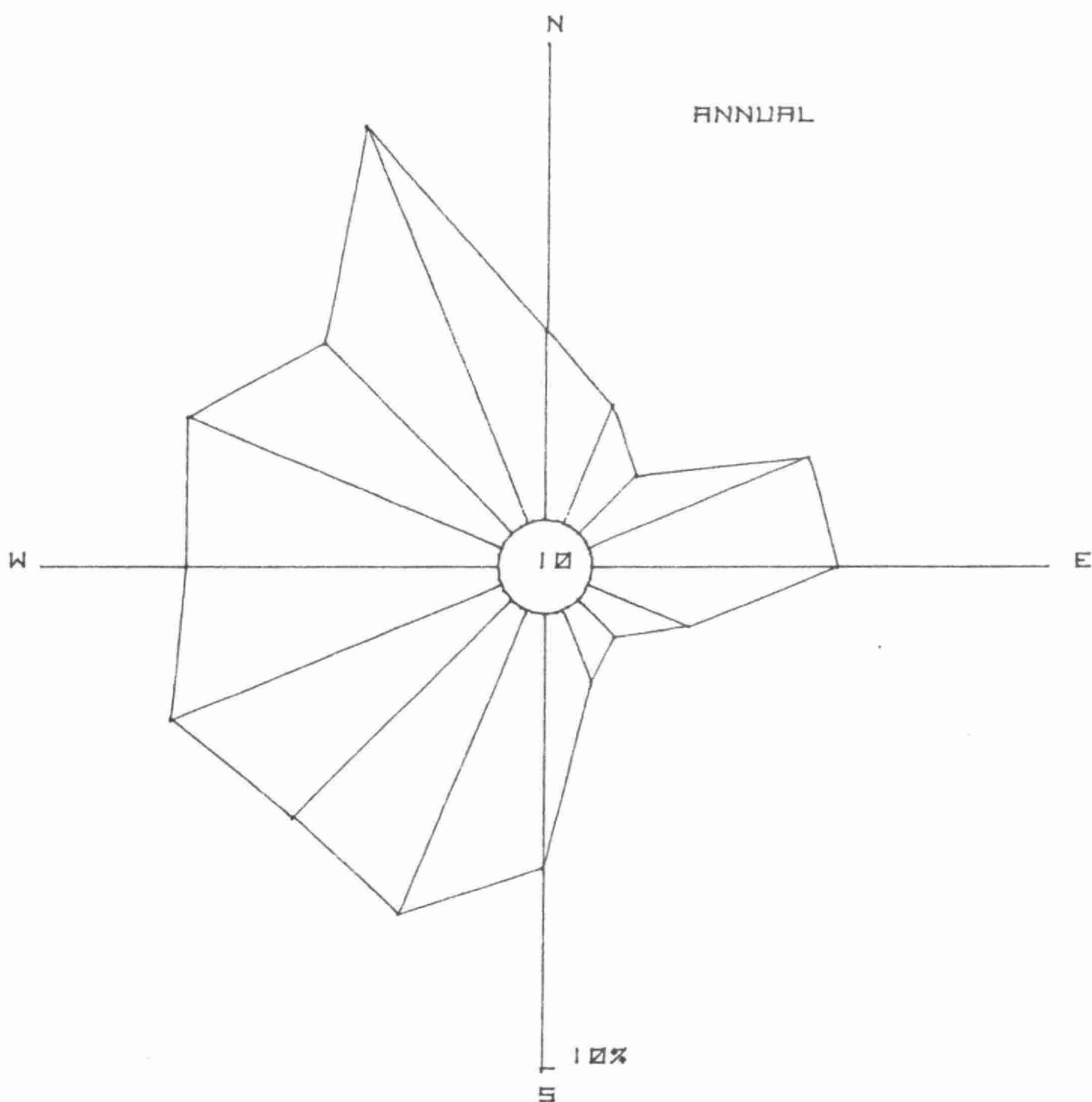
AT BRUCE PS ON LARCHMOUNT AVE

IN TORONTO

HEIGHT 21.5M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	11	13	9	8	18	20	10	0

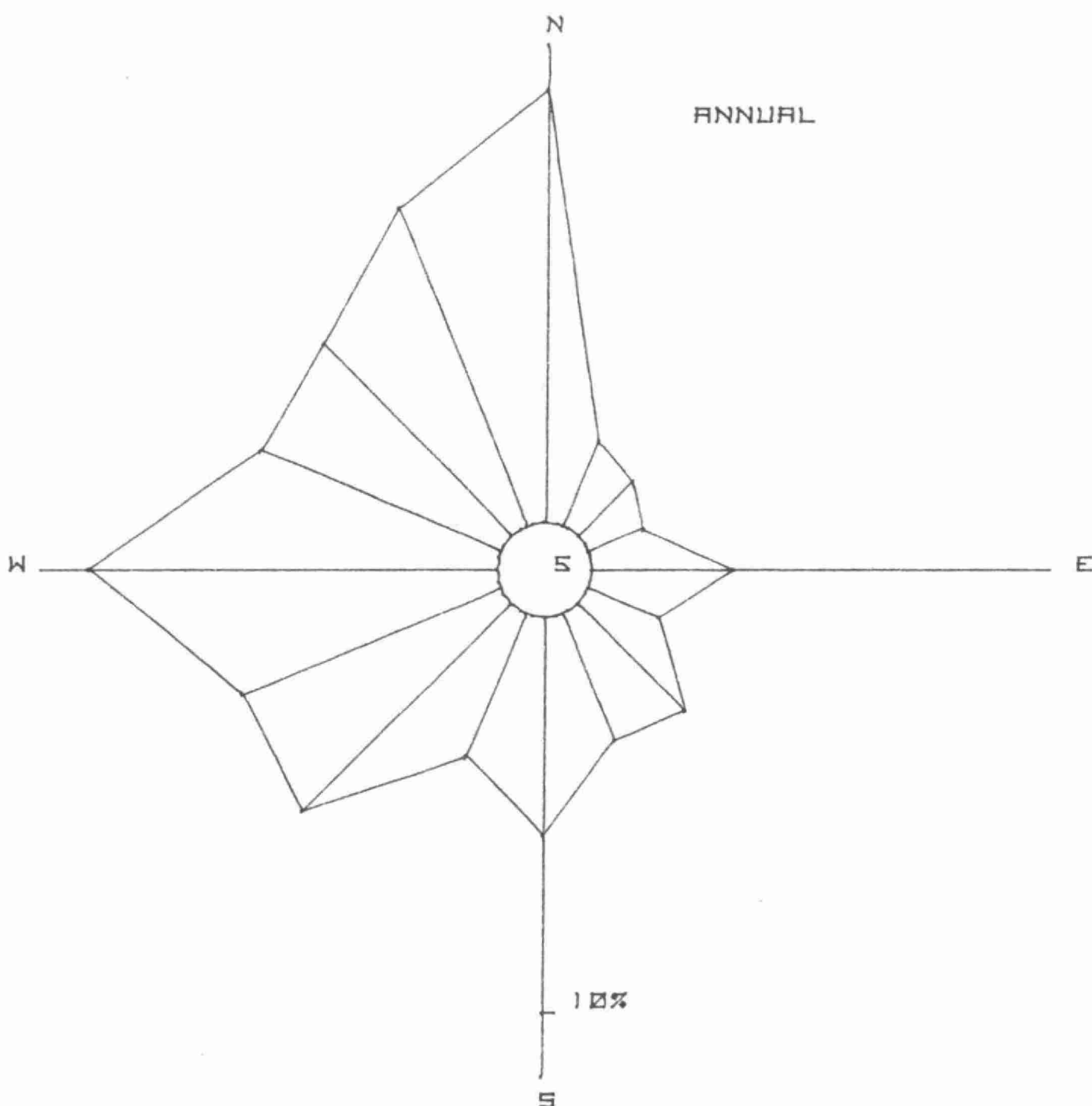


STATION INFORMATION

LOCATED 2.4KM N ON KEELE ST FROM MACDONALD
-CARTIER FREEWAY. AREA GENERALLY FLAT. IT
HAS AN EDDY EFFECT FROM N THROUGH E DUE TO
BLDGS IN AREA. HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
5	3	3	6	6	3	2	2	6	8	7	8	7	8	6	10	10

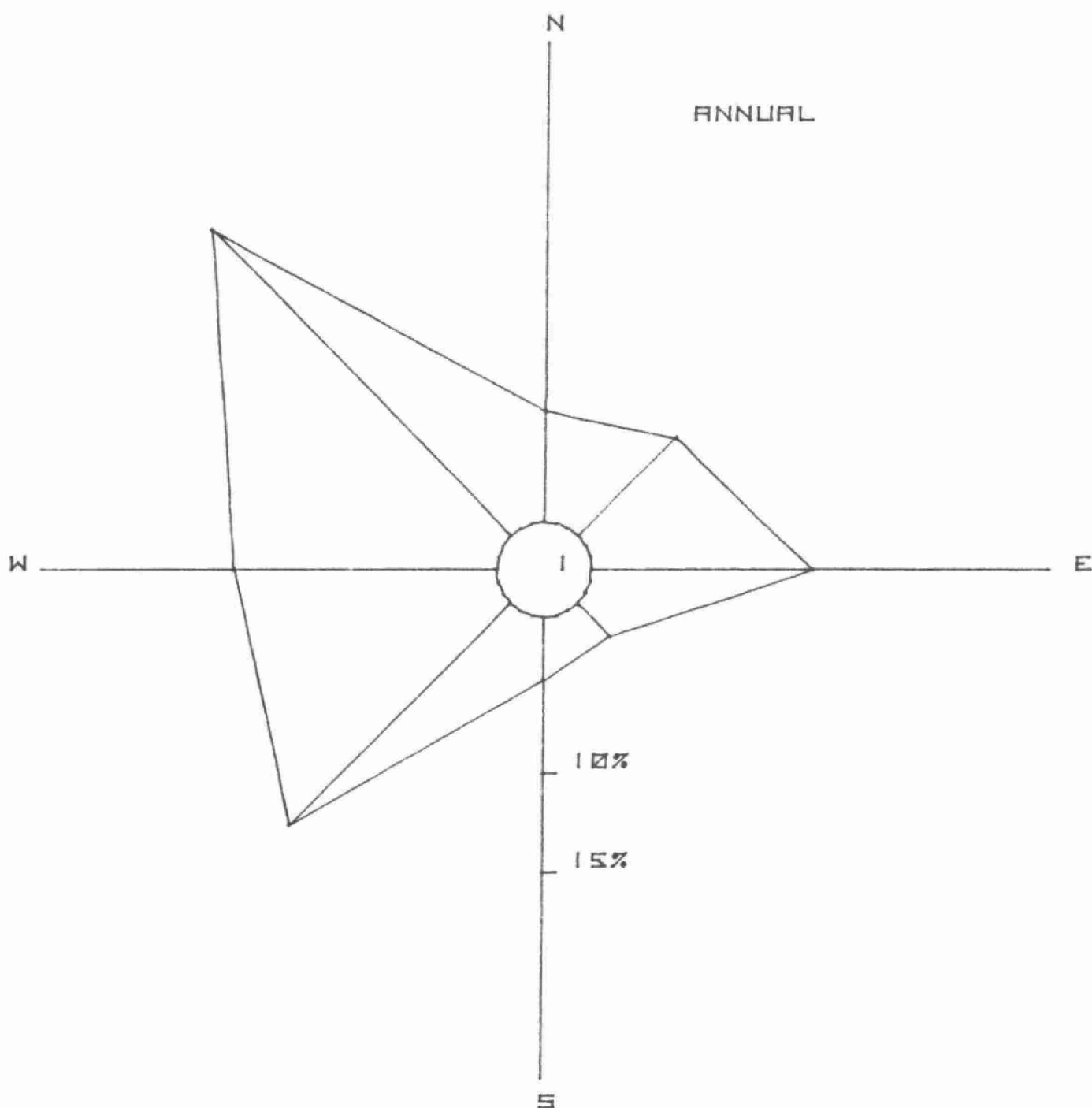


STATION INFORMATION

LOCATED ON SLIGHTLY ROLLING TO FLAT GROUND.
 ETOBICOKE CREEK IN VALLEY TO W. OCCASIONAL
 TREES IN OPEN COUNTRY. LAKE ONTARIO 11KM SE.
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
1	3	3	2	4	3	5	4	6	5	8	7	10	7	7	9	5

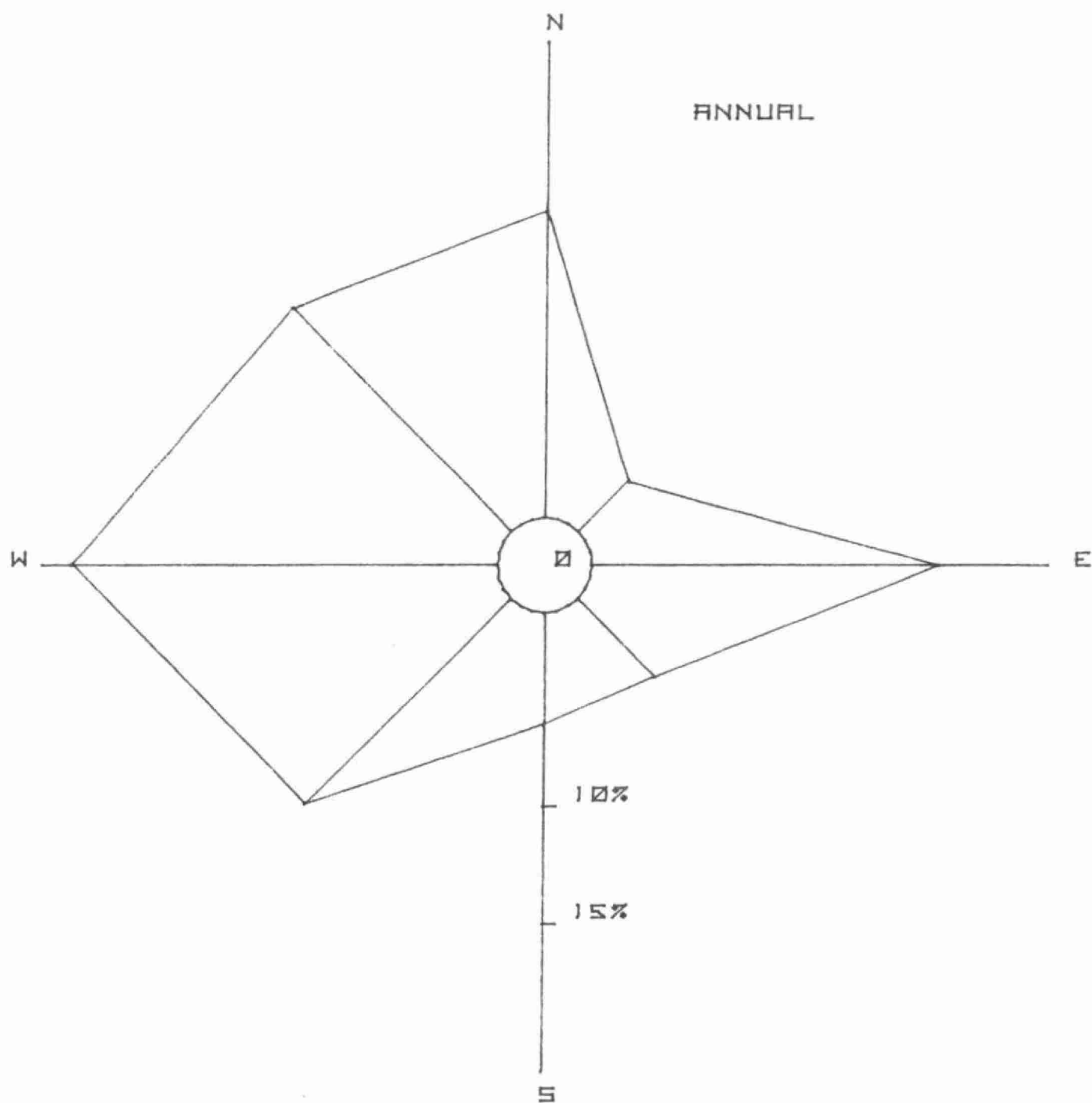


STATION INFORMATION

LOCATED
ON CREST OF SMALL HILL IN OPEN COUNTRY,
19KM NE OF CENTRE OF TORONTO.
HEIGHT 14.8KM

PERCENTAGE FREQUENCY

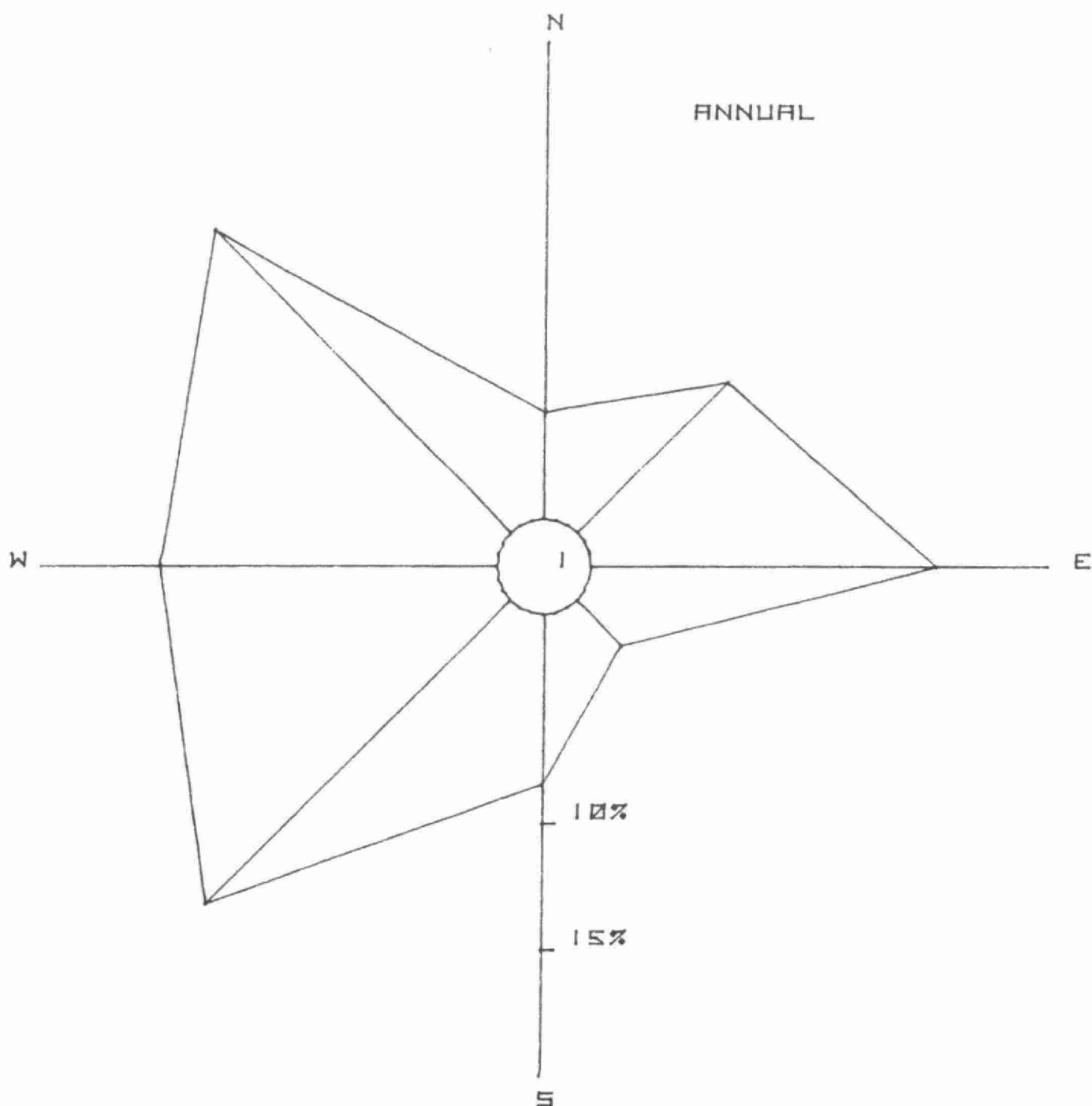
N	NE	E	SE	S	SW	W	NW	CALM
8	8	14	5	6	16	18	24	1



STATION INFORMATION
 LOCATED
 AT TORONTO ISLAND
 AIRPORT
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
15	5	17	7	7	14	20	15	0

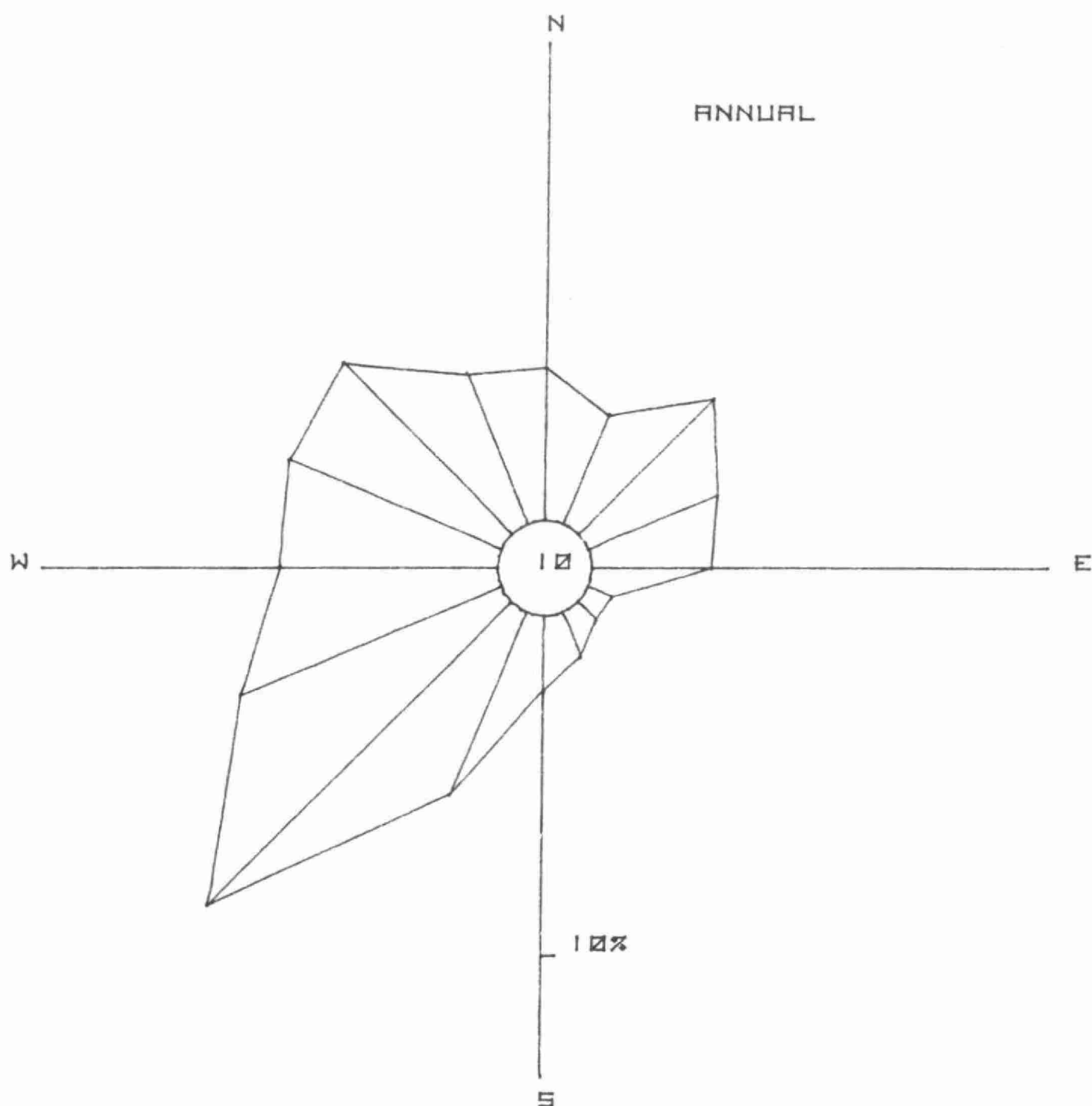


STATION INFORMATION

LOCATED NW END OF ISLAND, ANEMOMETER IS ON
ADMIN BLDG, WELL EXPOSED TO N WITH SOME
SHELTERING FROM HANGERS NW AND BLDGS TO NE.
HEIGHT 18.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	10	16	4	8	18	15	18	1

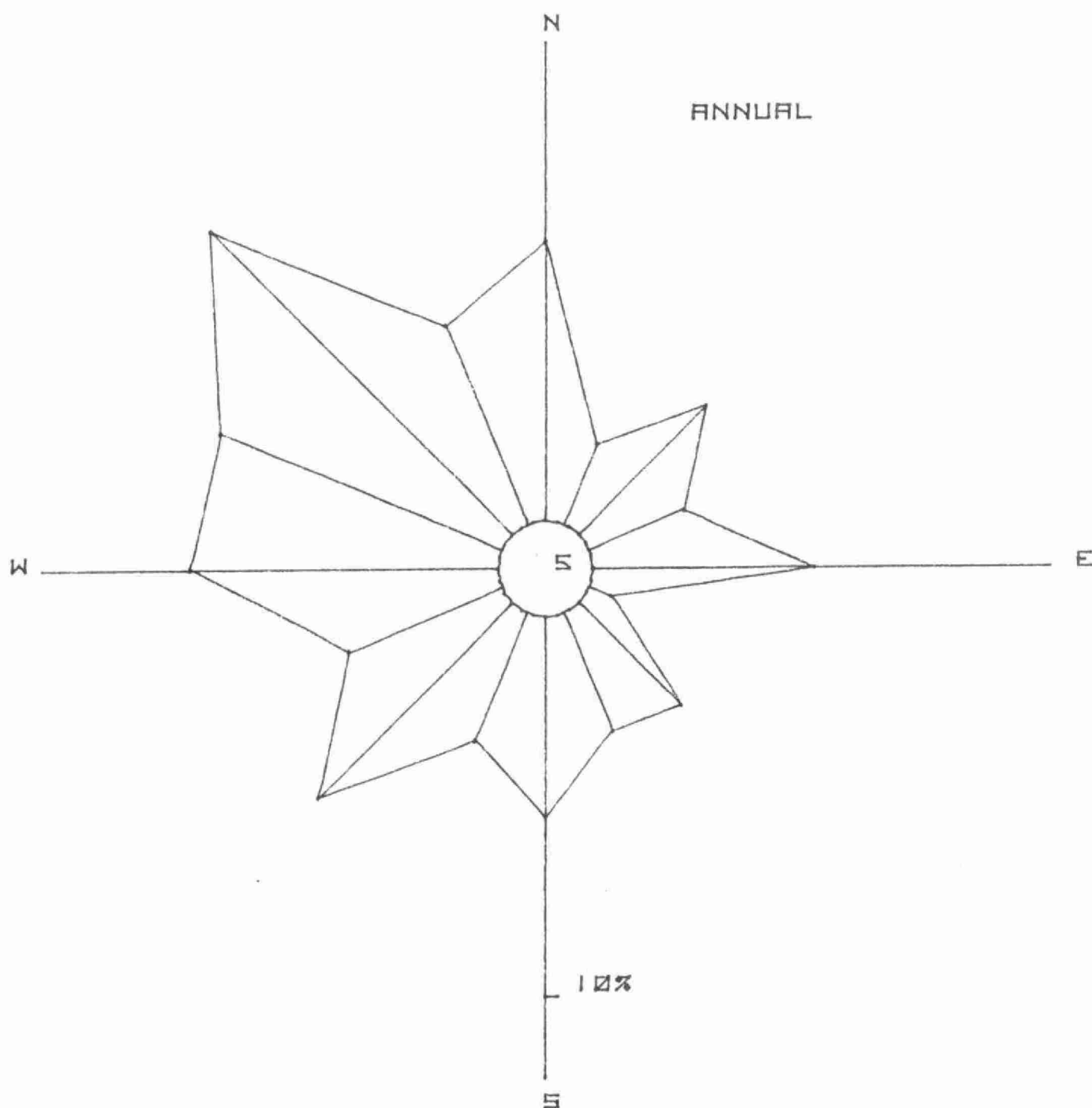


STATION INFORMATION

LOCATED CFB HWY2 2.4KM E OF TRENTON.
 FLAT TO E. ROLLING HILLS TO W-N. BAY
 OF QUINTE AND LAKE ONTARIO TO S.
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
4	4	6	5	4	2	2	2	3	6	12	9	7	7	8	5	10

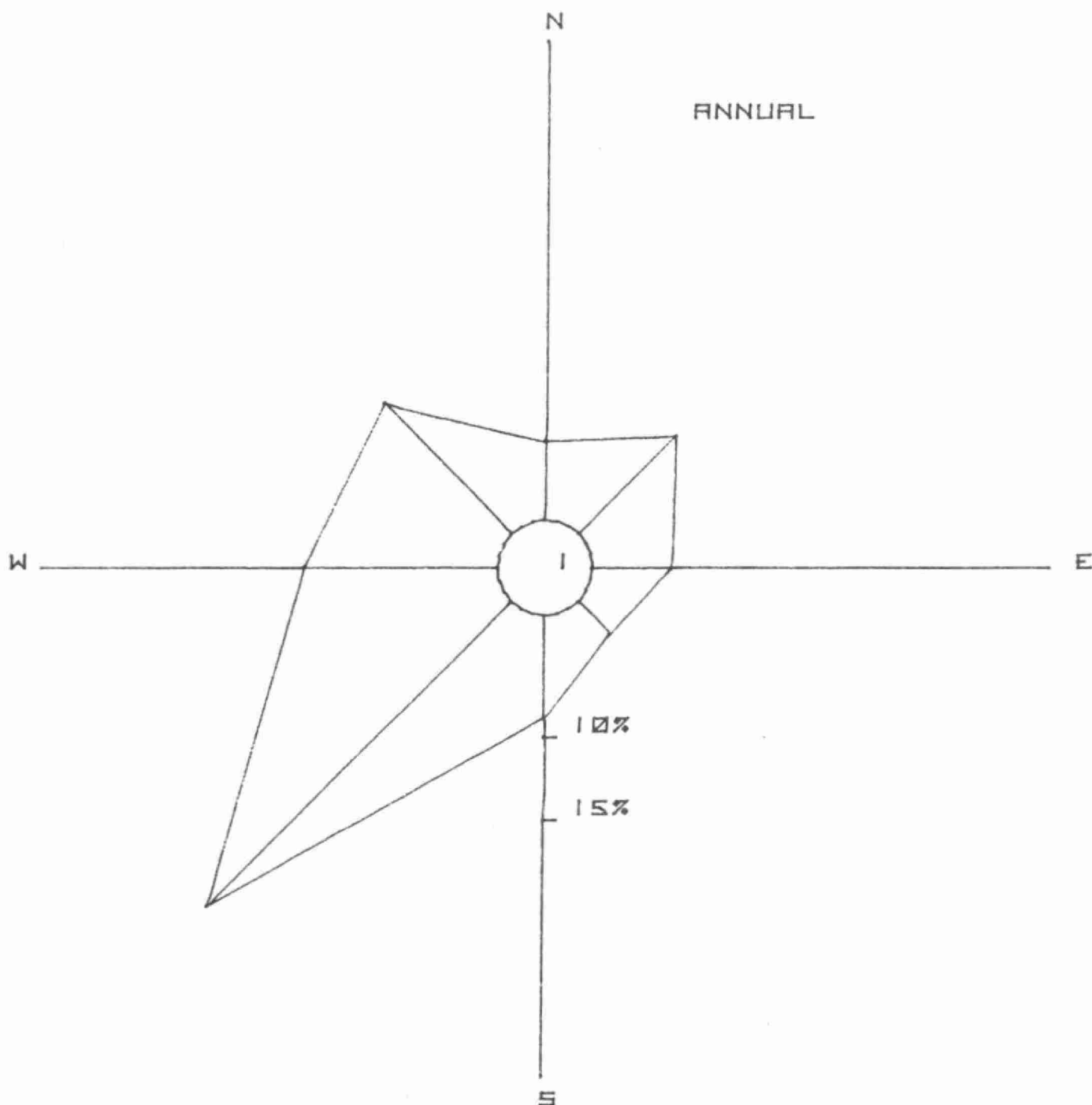


STATION INFORMATION

LOCATED ON AN ISLAND NEAR N SHORE OF BIG
TROUT LAKE. COUNTRY IS FLAT WITH HEAVY WOODS
AND MUSKEG. NUMEROUS LAKES. SITE WELL EXPOSED
HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
8	3	5	4	8	2	5	4	8	4	8	5	8	8	11	8	5

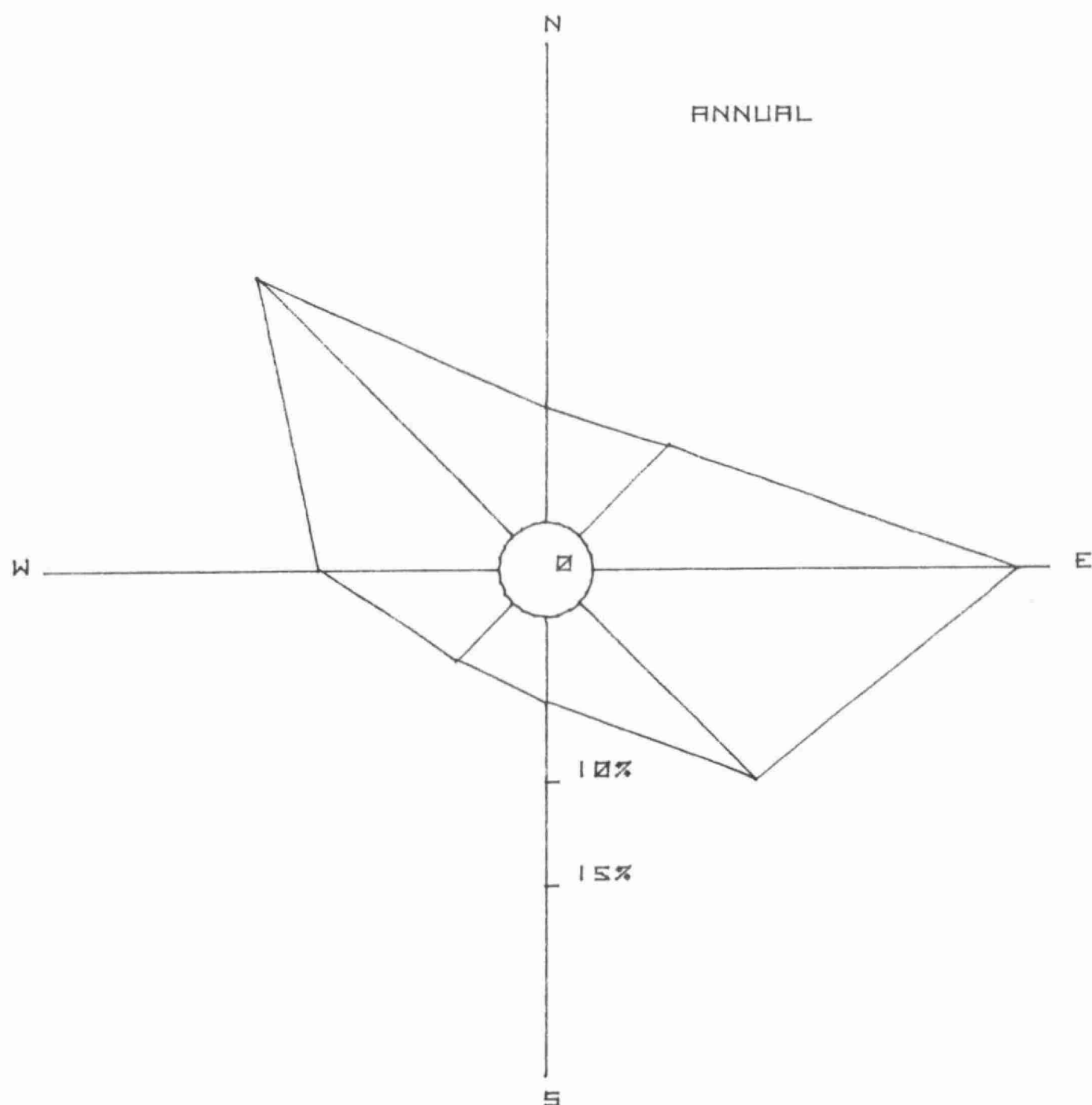


STATION INFORMATION

LOCATED AT EXPERIMENTAL FARM N OF TOWN. AREA
 FLAT WITH NIAGARA ESCARPMENT RUNNING WNW-ESE
 1.6KM S. ESCARPMENT HEIGHT 61.5-92.3M.
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

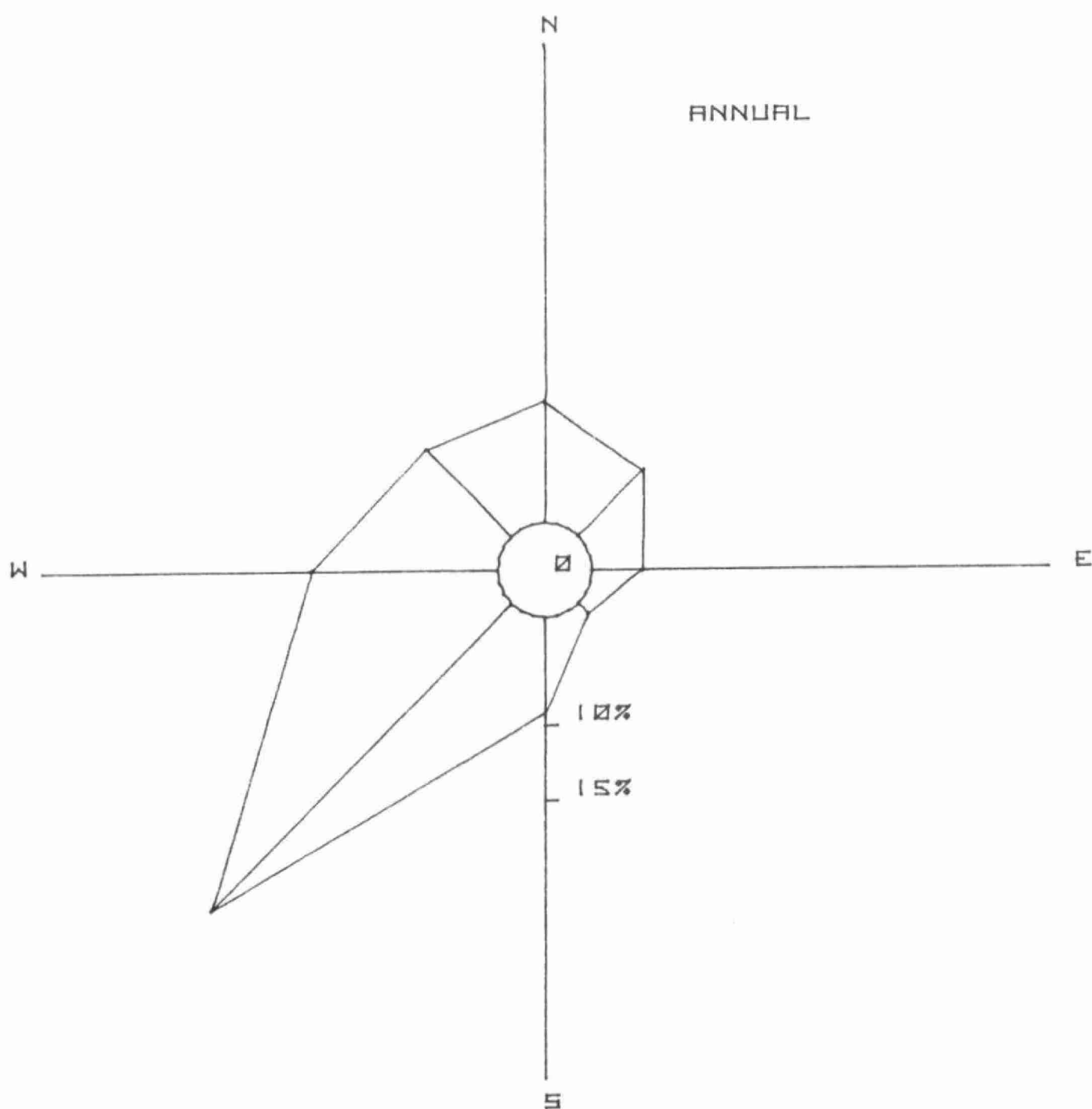
N	NE	E	SE	S	SW	W	NW	CALM
8	11	8	6	8	28	15	14	1



STATION INFORMATION
 LOCATED
 IN WAWA AT
 ALGOMA ORE LUCKIE PIT
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

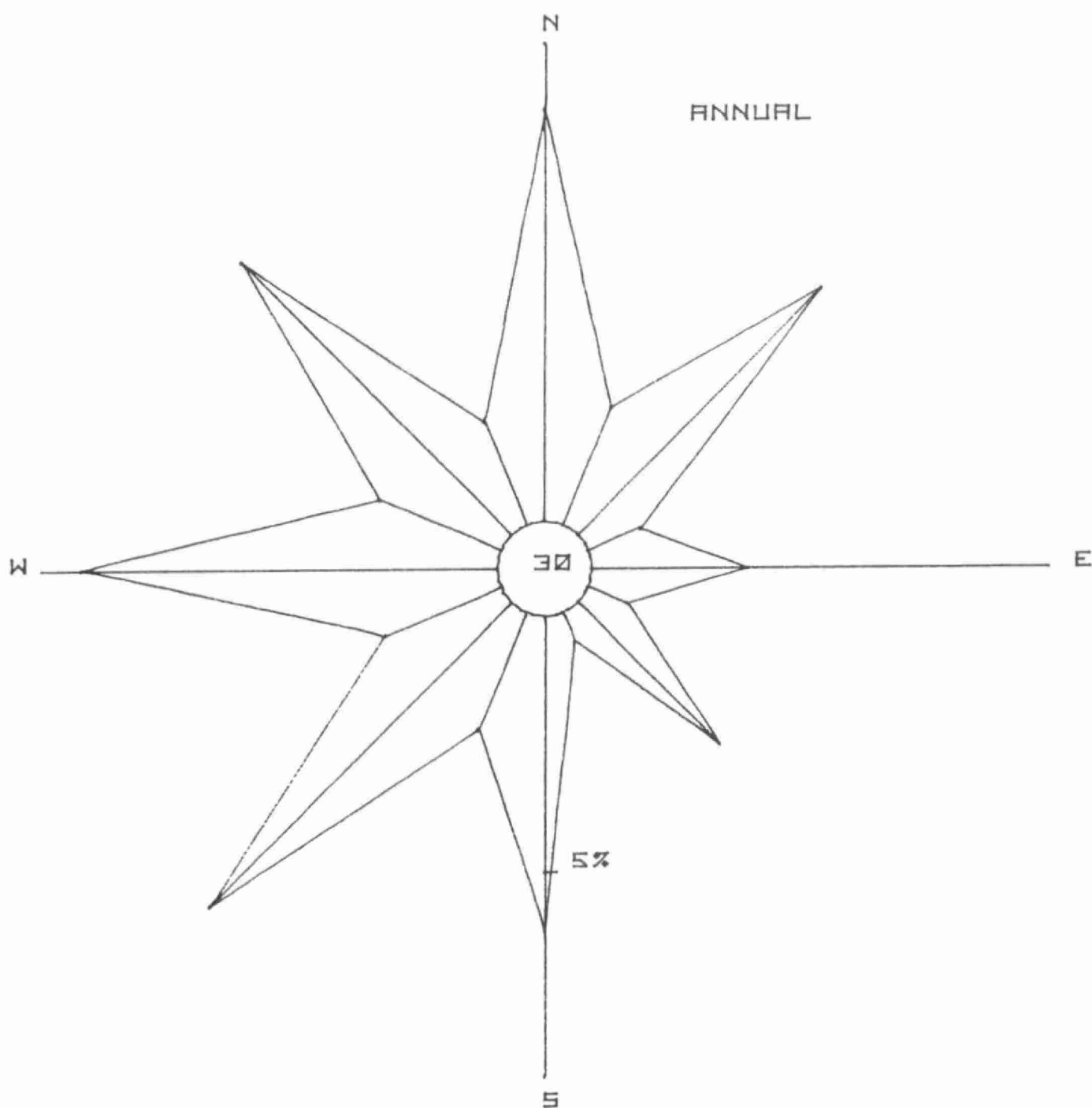
N	NE	E	SE	S	SW	W	NW	CALM
8	8	23	14	6	6	11	20	0



STATION INFORMATION
 LOCATED
 ON PS AT 309 BEATRICE ST.
 WELLAND
 HEIGHT 10.1M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
11	8	7	4	10	32	16	11	0

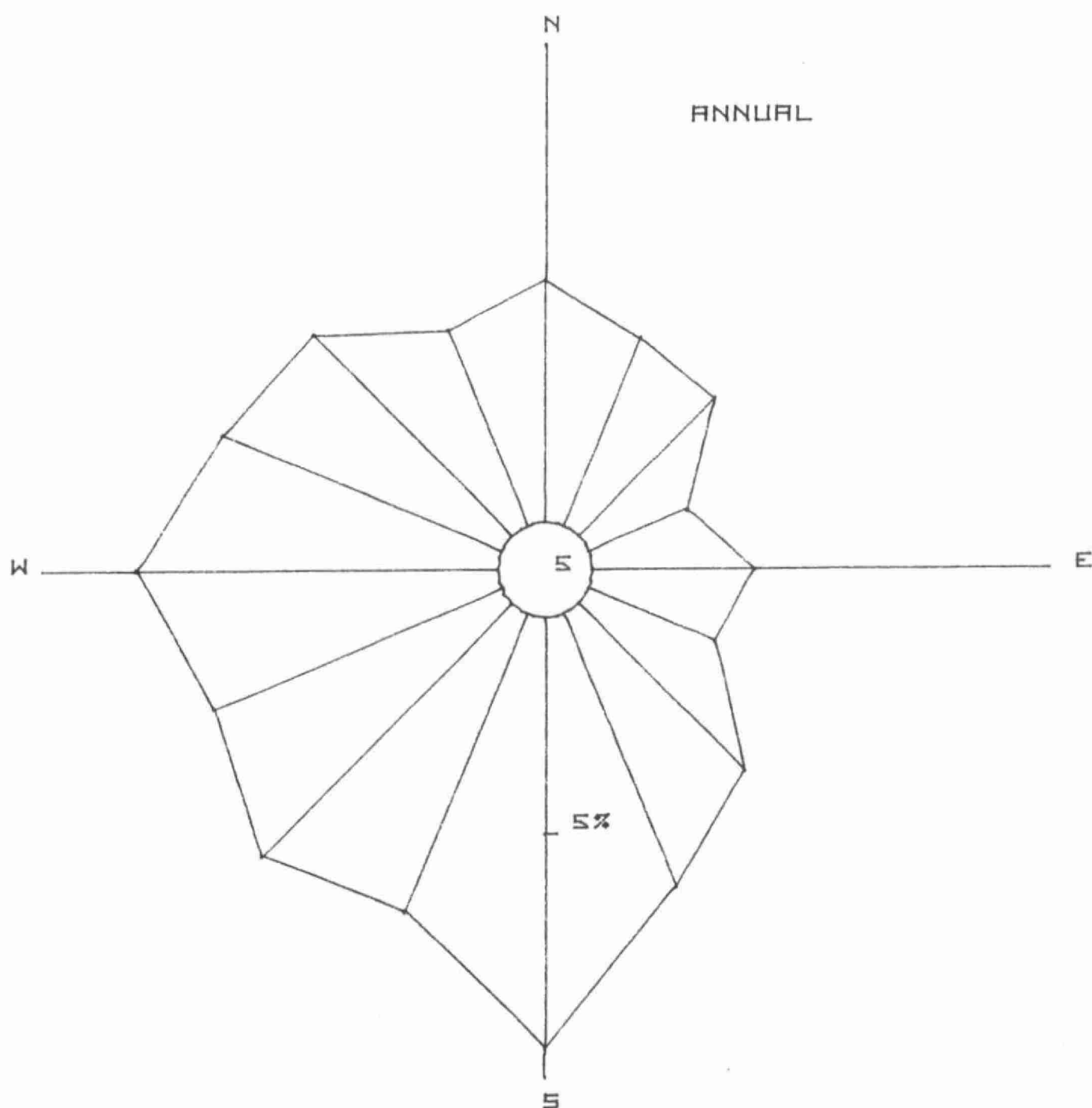


STATION INFORMATION

LOCATED IN SAUCER LIKE DEPRESSION AT AIR
SERVICE BLDG. HILLY COUNTRY IN ALL DIRECTION
WITH TREES AND BUSH REMOVED.
HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
8	3	7	2	3	1	4	1	6	3	8	3	8	3	7	3	30

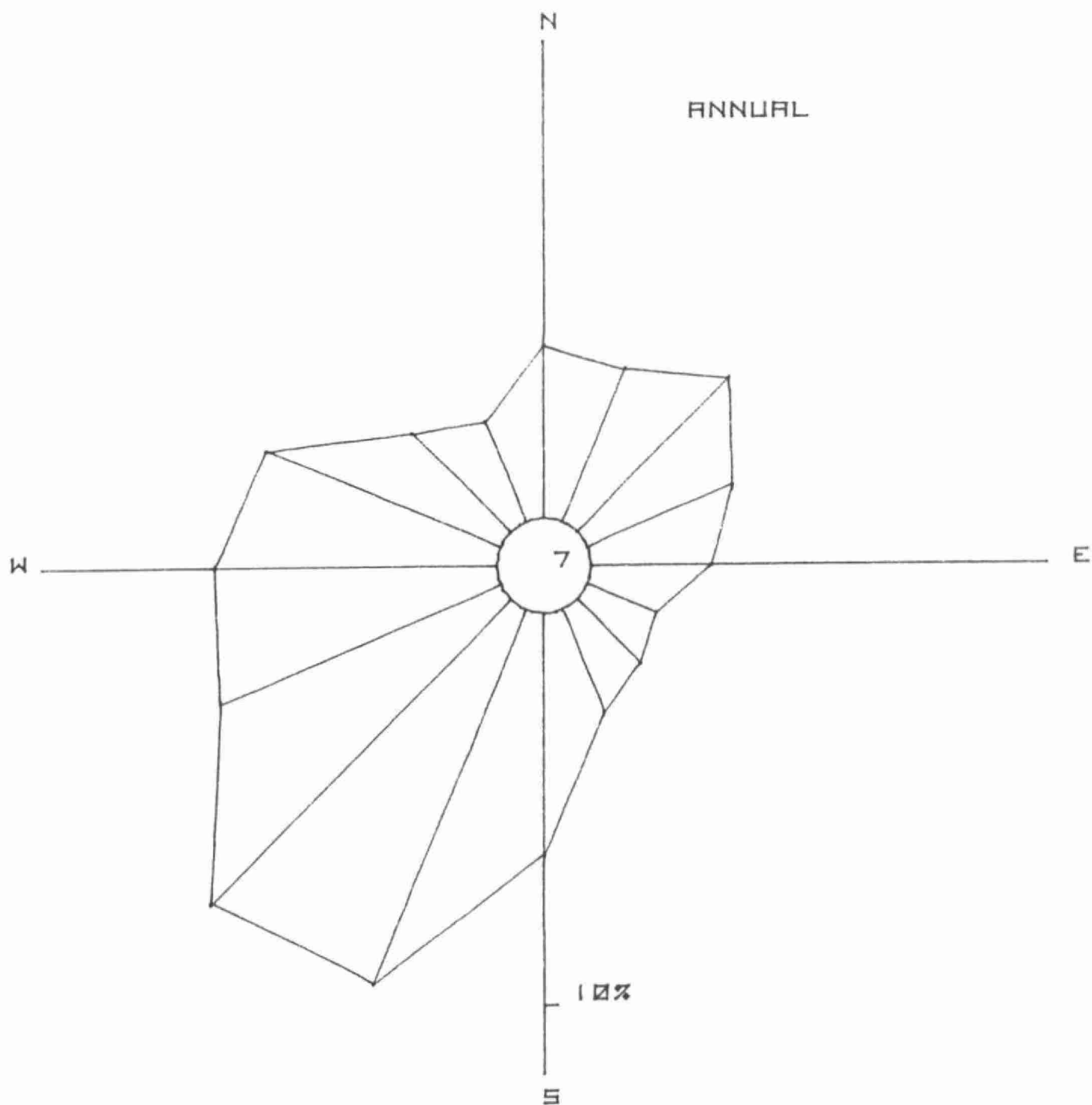


STATION INFORMATION

LOCATED ON SLIGHT RAISED GROUND AT
 AIRPORT TOWER 153.8M E OF TERMINAL
 BLDG 215.4M S OF WOODS.
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
5	5	5	3	4	4	5	7	8	7	8	7	8	7	6	5	5

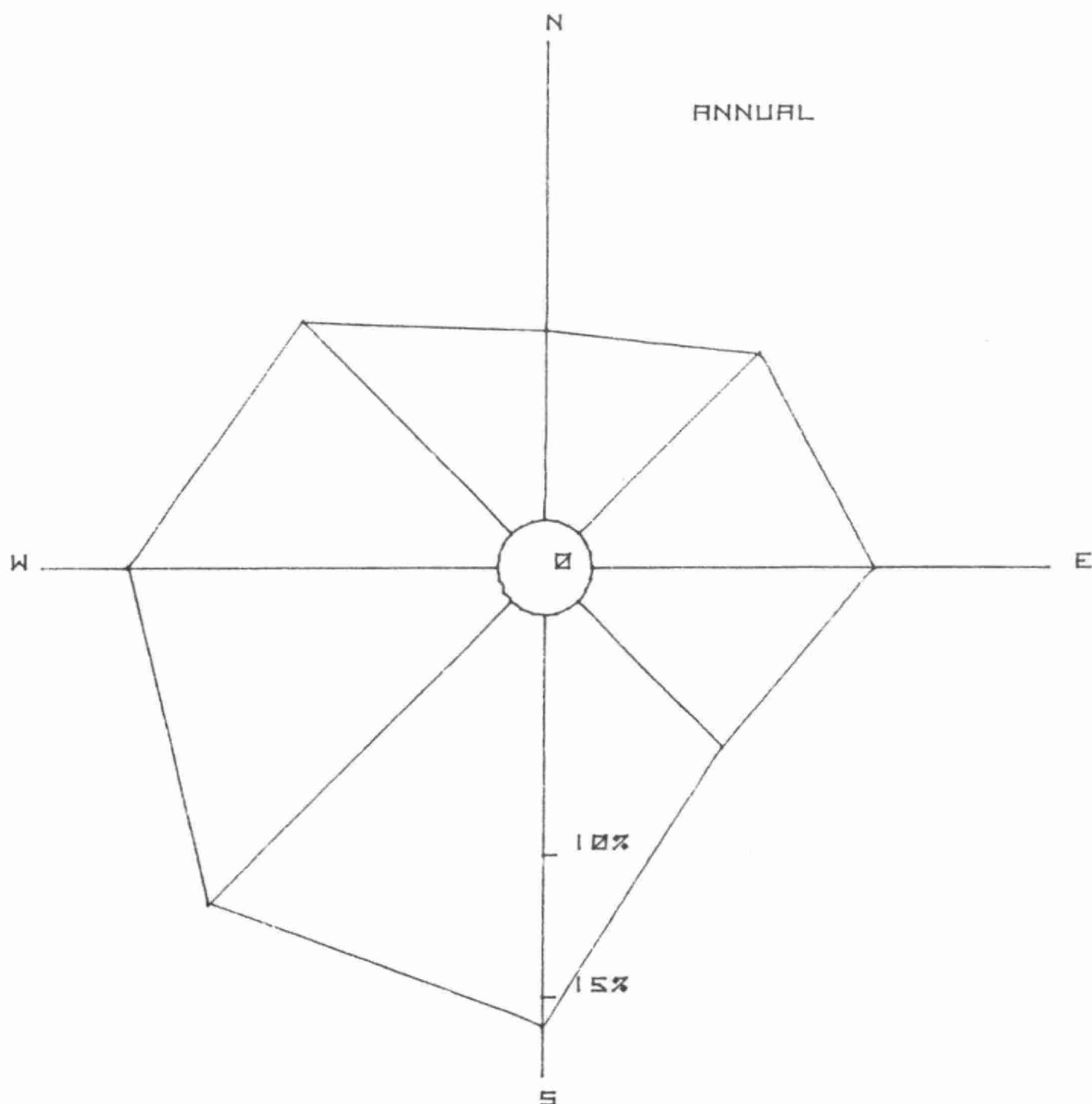


STATION INFORMATION

LOCATED NW CITY NEAR CENTRE RUNWAY
 COMPLEX, NO OBSTRUCTIONS IN FLAT
 TREELESS COUNTRY.
 HEIGHT 10.2M

PERCENTAGE FREQUENCY

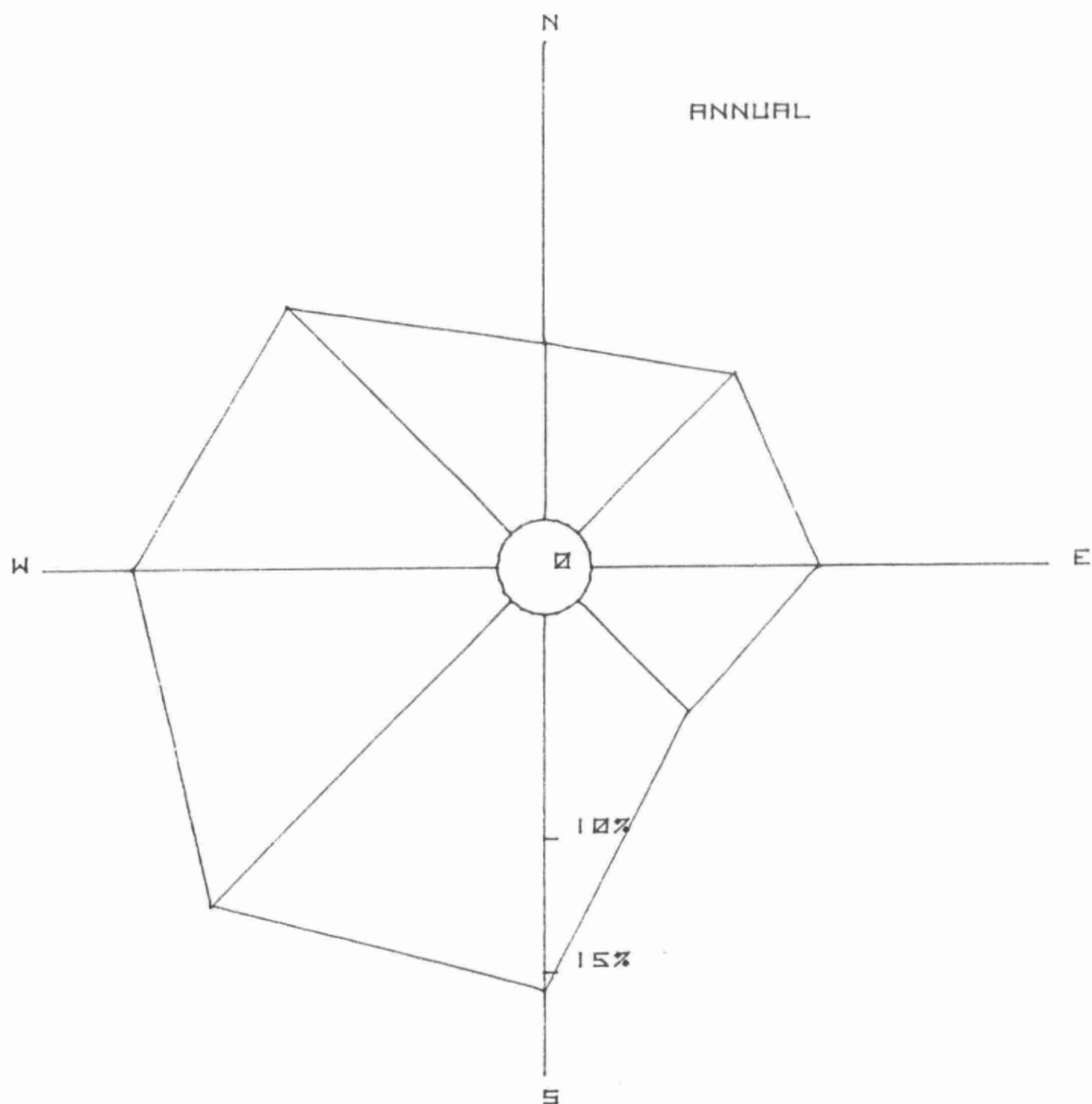
N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
5	5	6	5	4	3	3	4	7	10	11	8	8	7	4	4	7



STATION INFORMATION
 LOCATED
 MORTON DOCK AT
 BEDFORD/OJIBWAY
 HEIGHT 6.2M

PERCENTAGE FREQUENCY

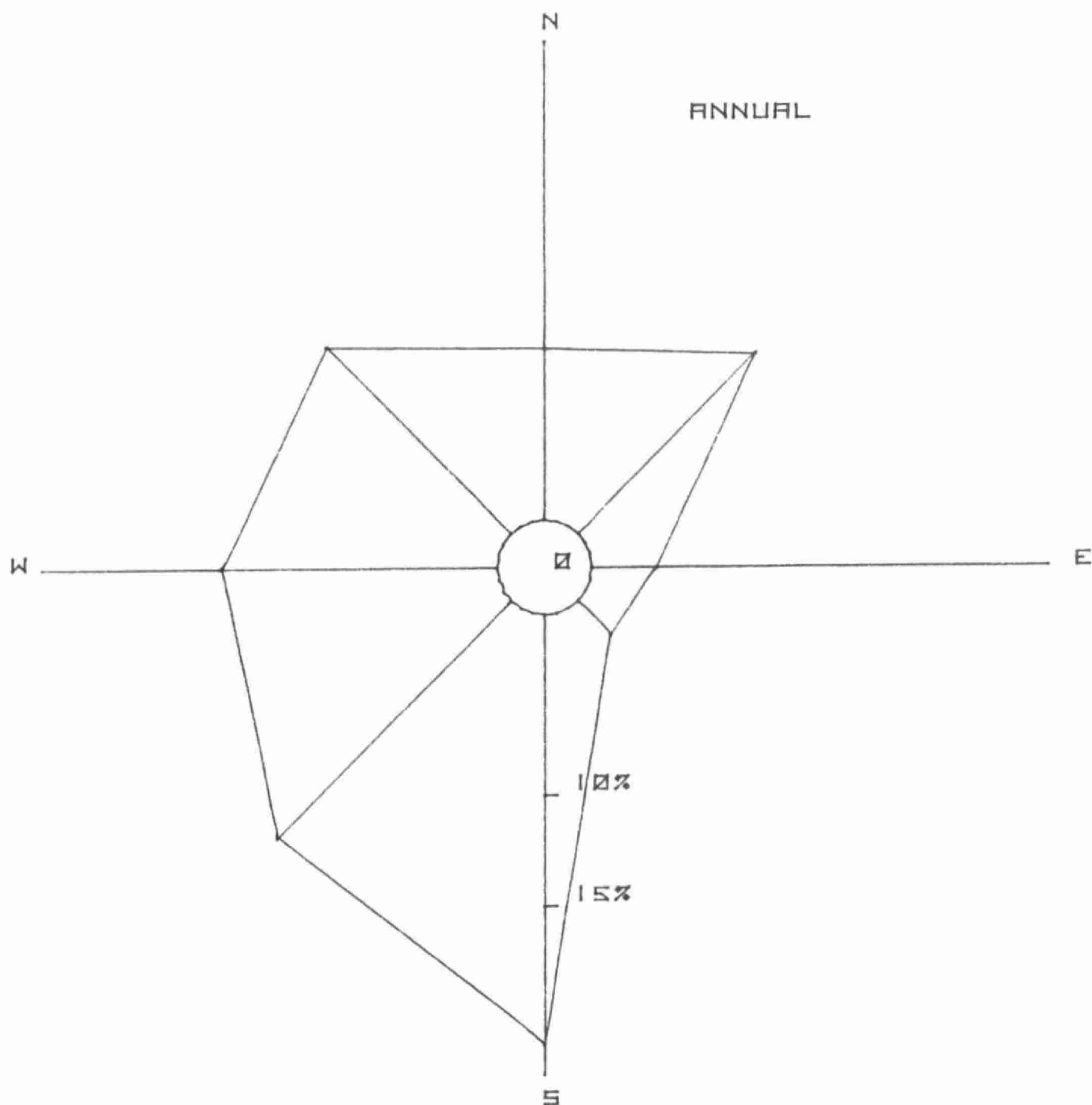
N	NE	E	SE	S	SW	W	NW	CALM
8	11	12	8	16	17	15	12	0



STATION INFORMATION
 LOCATED
 MORTON DOCK AT
 BEDFORD/QUIBWAY
 HEIGHT 30.8M

PERCENTAGE FREQUENCY

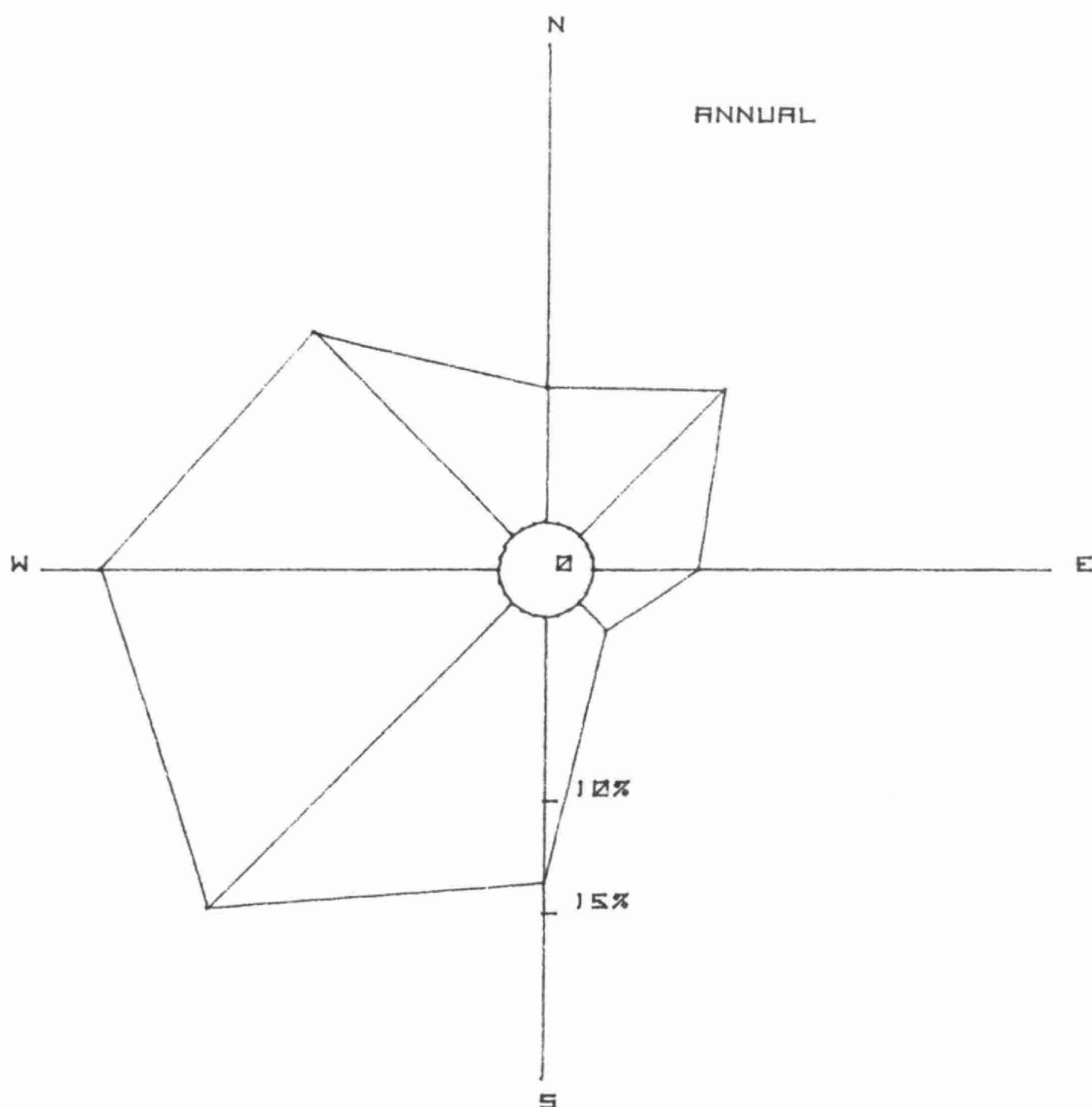
N	NE	E	SE	S	SW	W	NW	CALM
8	10	10	8	18	18	18	14	0



STATION INFORMATION
 LOCATED
 RIVERSIDE DRIVE
 ON CP TOWER IN WINDSOR
 HEIGHT 19.4M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
10	13	5	4	21	17	15	14	0

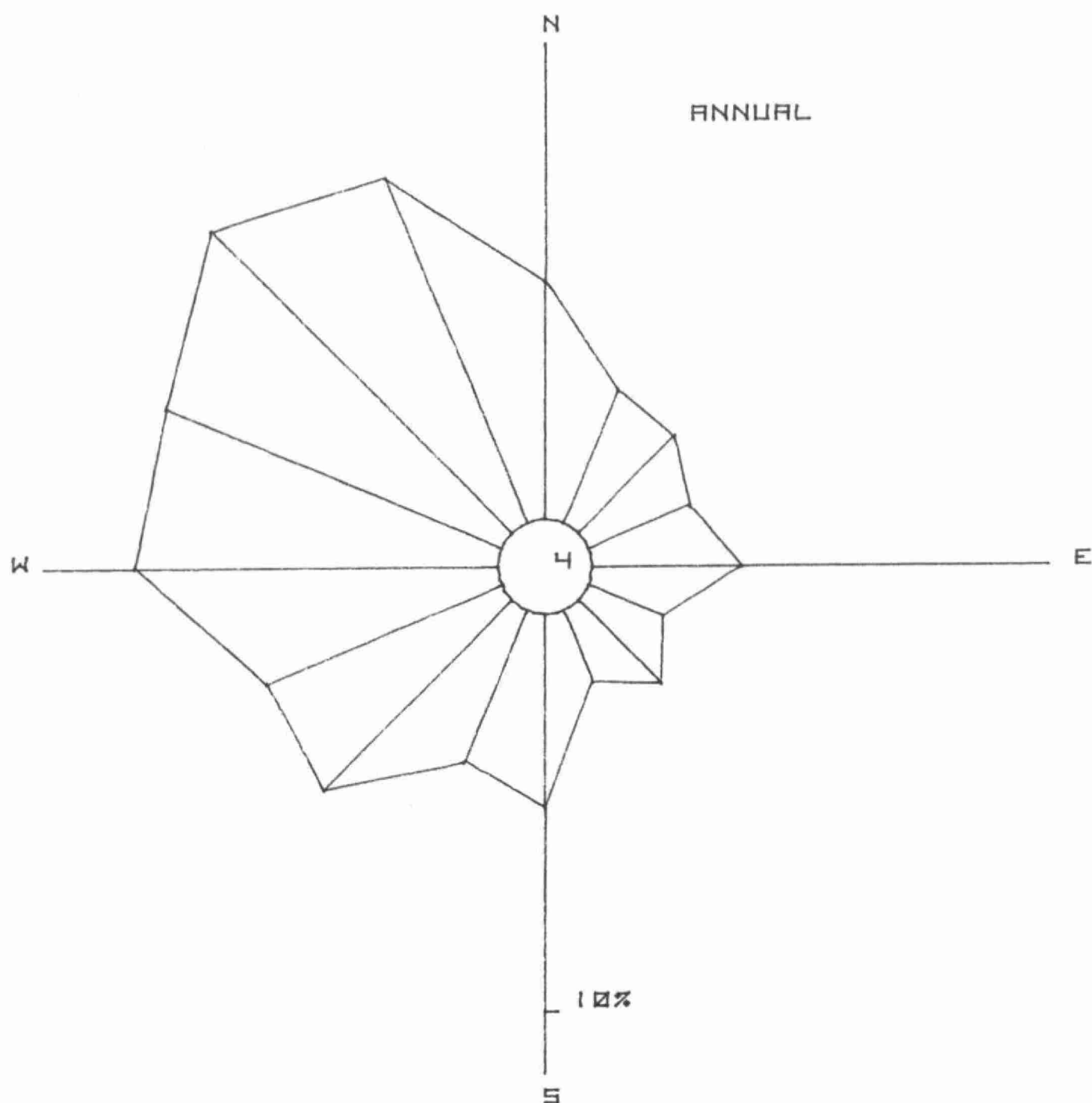


STATION INFORMATION

LOCATED
RIVERSIDE DRIVE
ON CP TOWER IN WINDSOR
HEIGHT 46.2M

PERCENTAGE FREQUENCY

N	NE	E	SE	S	SW	W	NW	CALM
8	11	7	4	14	12	20	15	0



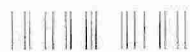
STATION INFORMATION

LOCATED IN GENERALLY FLAT COUNTRY.
 MUSKEG WITH LOW TREES LYING APPROX
 1.6KM FROM STATION TO S-NW.
 HEIGHT 13.8M

PERCENTAGE FREQUENCY

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
6	4	4	4	4	3	4	3	5	5	7	7	8	9	11	10	4

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FILE ANN WIND AL 1/21